HUMPHREY

GAS WATER HEATERS

A MANUAL FOR ARCHITECTS AND DEALERS

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GAS WATER HEATERS

A BOOK OF FACTS FOR ARCHITECTS AND DEALERS

CONTAINING

DESCRIPTIONS of NINE DISTINCT TYPES OF HUMPHREY SYSTEMS

Including

Detailed Instructions for Proper Installations; Diagrams of model Heater Installations; Architectural Specifications; Methods of determining proper sizes for the various requirements; Valuable Data concerning Plumbing of Hot Water Systems.

HUMPHREY COMPANY, KALAMAZOO, MICH.

DIV. OF RUUD MFG. CO.

Branches, Sales and Service Locations:

Baltimore.....1728 N. Charles Street
Boston.....220 Devonshire Street
Brooklyn.....1255 Fulton Street
Chicago.....916 S. Michigan Avenue
Cincinnati.....629 Main Street
Cleveland.....2036 E. 105th Street
Dallas.....1811 Main Street
Denver.....230 Fifteenth Street
Detroit.....1408 Broadway
Flint.....410 Harrison Street
Fort Worth.....217 W. Eighth Street
Grand Rapids..Gas Building (3rd floor)
Houston.....1020 Main Street
Indianapolis.....201 Kresge Building
Los Angeles.....930 S. Main Street
Louisville.....315 W. Jefferson Street
Milwaukee....Sycamore at West Water
Minneapolis....5348 Irving Avenue So.
Newark.....53 Bank Street
New Orleans.....816 Baronne Street
New Rochelle.....24 Lawton Street
New York..132 W. 42nd Street (6th floor)
Oakland.....316 Twelfth Street
Philadelphia.....1823 Market Street
Richmond.....219 Grace Street
Sacramento.....1121 Tenth Street
San Antonio.....223 Avenue C
San Diego.....425 A Street
San Francisco.....439 Sutter Street
San Jose.....1041 S. First Street
St. Louis.....11 N. Grand Boulevard
St. Paul.....65 E. Sixth Street
Washington.....1207 I Street, N. W.

MAIN PLANT AT KALAMAZOO, MICHIGAN

Whoever contributes comfort, economy and healthfulness to the home is man's benefactor.

HUMPHREY HOT WATER SERVICE radiates from this modern factory at Kalamazoo, through our extensive distributing organization, factory-operated branch offices and service stations, distributing agencies and trained traveling representatives who co-ordinate all factors which lead to the complete satisfaction of the ultimate user of Humphrey equipment. The Humphrey Company is thus founded on this basis of genuine service.

HUMPHREY HOT WATER

Your Influence in Advancing the Benefits of Hot Water Service

BACK of the universal demand that has arisen for instant hot water everywhere — at home, at the office, at the factory — is the active and highly creditable support of the plumbers, dealers and architects of America.

To be sure, the inventions embodied in HUMPHREY Automatic Gas Water Heaters marked an important step toward this great comfort. But without the recognition of these distributing factors and without their enthusiastic promotion, such long strides could never have been accomplished within comparatively few years.

Today, everyone recognizes the fundamental need and advantages of automatic, instantaneous hot water service. In all types of structures, from the modest cottage to the massive skyscraper, this method of providing adequate hot water is considered essential to health and comfort. The public has learned to *expect it*, without *any limitations!*

You are concerned in meeting this demand in the most efficient manner. Your reputation, your business, depends in no small degree on how you serve this hot water requirement. Simple, trouble-free equipment, economical to operate, speedy and reliable in results, manufactured by a reputable, sound organization — this is the sort of equipment you can afford to recommend.

And this is the only sort of Gas Water Heating equipment HUMPHREY can afford to make! The HUMPHREY organization has grown big on that principle. To help you serve your customers' interests in the most efficient manner is our one ideal.

Hot Water at the Turn of the Faucet

That is all there is to it! HUMPHREY Automatic Gas Water Heaters have been so simplified and perfected that, once installed, properly, with due regard to capacity and requirements, the user has nothing to think of but the turn of the faucet for an unlimited flow of hot water.

HUMPHREY Gas Water Heaters represent the height of convenience, comfort and economy.

The fact that the HUMPHREY Line includes Gas Water Heaters for "every purpose and purse" has added greatly to the extent of this hot water benefaction in hundreds of thousands of American homes.

From the smallest cottages with their HUMPHREY Copper Coil Tank Heaters to the great commercial buildings — such as the Gotham National Bank Building, housing daily nearly 2500 people, with its hot water service supplied by a big HUMPHREY Multi-Coil Automatic Storage System — and for all demands between these extremes, some HUMPHREY Gas Water Heater is capable of filling the bill. No one need be deprived of hot water service, for in the HUMPHREY Line of Gas Water Heaters there is a size and a price within the reach of all.

"Hot water at the turn of the faucet" can be a reality in every home in America — and in every office and shop, too. Plumbers, Architects and Gas Companies have done much to bring this about, and *are going to do* still more!

Humphrey Special Engineering Service

Always feel free to consult the HUMPHREY Engineering Department for any specific information needed under unusual circumstances not covered by the data in this book. No obligation whatsoever on your part for this special HUMPHREY Service.

The recommendations embodied in this book, based on practical experience of 39 years in perfecting reliable, economical hot water service, should prove valuable to you.

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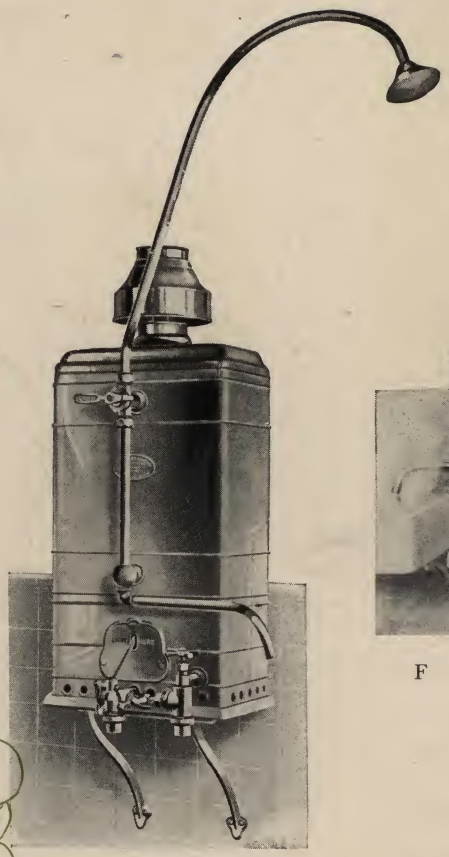

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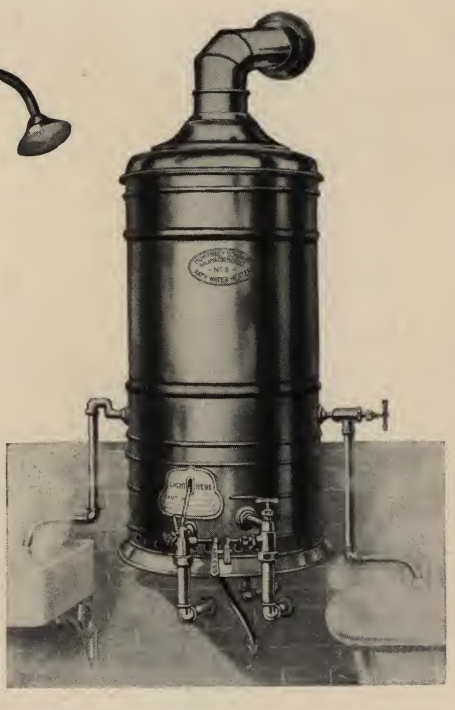

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There's a Humphrey for

Any hot water need, however large or small, or whatever the price restrictions may be, can best be satisfied with some particular HUMPHREY Gas Water Heater. The HUMPHREY line—the largest and most complete line in the market today—comprises:

D

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Every Purpose and Purse

A—Humphrey Multi-Coil Storage Heaters—4 sizes.
B—Humphrey Automatic Water Heaters with Thermostatic Control—6 sizes.
C—Humphrey Automatic Water Heaters with Pressure Valve Control—3 sizes.
D—Humphrey "Utility Four" Line Heaters—2 models, 2 sizes each.
E—Humphrey Storage Combinations—3 sizes.
F—Humphrey Instantaneous Bath Water Heaters—2 sizes.
G—Humphrey Cottage Automatic Water Heaters.
H—Humphrey Copper Coil Tank Water Heaters—3 models, 2 sizes.
I—Acme Automatic Storage Systems.

Humphrey Chart or Guide

For the convenience of Architects, Plumbers, Dealers, and Users in determining the type of equipment best suited to various requirements in all classes of buildings.

Class of Building	General Conditions and Requirements	Types of HUMPHREY Heaters Recommended
Homes	Normal water pressure and normal gas supply, (instantaneous hot water service desired throughout the house). (1 or 2.)	1. Type "A" Automatics (See pages 7 to 12.) 2. Non-Thermostatic Type Instantaneous Humphrey (See page 13.)
	Sub-normal water pressure and limited gas supply.	Humphrey Automatic Storage Systems (See pages 21 to 25.)
	Heavy demands, simultaneously, from several faucets (in very large dwellings).	Humphrey Multi-Coil Storage Systems (See pages 16 to 20.)
	Conservative demands, (in small homes—for kitchen, laundry, bath, etc.).	Humphrey "Utility 4" Line (See pages 14 and 15.)
	Conservative demands, (in small homes—for kitchen, laundry, bath, etc.).	Humphrey "Cottage Automatics" (See page 27.)
	Bathroom Service only, (1 or 2).	1. Instantaneous Bath Heaters (See page 28.) 2. Shower Bath Heaters (See page 29.)
	Kitchen Service, only.	Tank Heaters (See pages 30 and 31.)
	Laundry Service, only.	Tank Heaters (See pages 30 and 31.)
Hotels and Apartments	Heavy demands, (simultaneously, from many faucets, with one central unit).	Humphrey Multi-Coil Storage Systems (See pages 16 to 20.)
	Equipment for individual apartments, (1, 2, or 3).	1. Cottage Automatics (See page 27.) 2. Bath Heaters (See pages 28 and 29.) 3. Tank Heaters (See pages 30 and 31.)
Office Buildings	All offices supplied from one central unit.	Humphrey Multi-Coil Storage Systems (See pages 16 to 20.)
	Equipment for individual offices.	(Same as for Individual Apartments as above.)
Public Bldgs.	Cleaning, scrubbing and janitor work.	Tank Heaters (See pages 30 and 31.)
Schools	Janitor work.	Tank Heaters (See pages 30 and 31.)
	Laboratory work.	Tank Heaters (See pages 30 and 31.)
Industrial Plants	Employees' showers, etc.	Bath Heaters (See pages 28 and 29.)
	Manufacturing, (where hot water of certain definite temperature is demanded). (1, 2, or 3.)	1. Type "A" Automatics (See pages 7 to 12.) 2. Multi-Coil Storage Systems (See pages 16 to 20.) 3. Automatic Storage Systems (See pages 21 to 25.)

For Special Engineering recommendations or information on unusual installations write direct to the Home Office of Humphrey Company, Kalamazoo, Michigan.

Humphrey Automatic Gas Water Heater with Thermal Control—Type "A"

FOR limitless, instantaneous, economical, pay-for-only-what-you-use hot water supply, the HUMPHREY Automatic Gas Water Heater, Type "A," with thermo control represents the highest efficiency attainable. Hundreds of thousands of housewives and men who have used the HUMPHREY with unfailing success know its practicability for keeping you in hot water at the turn of a faucet.

The operation is entirely automatic. Water is heated only as it flows through the coils. Opening any hot water faucet starts the flow of water through the heater and automatically turns on the gas. Closing a faucet stops the flow of the water, the burning of gas, and the expense. When all hot water faucets are closed, only a tiny pilot remains burning.

The Type "A" HUMPHREY has the renowned double gas control. This consists—first, of the primary or two-piece, two-point suspension piston automatic water valve, which turns the gas on and off by opening and closing a faucet; second, the secondary control HUMPHREY heat zone thermostat, which regulates the gas consumption through a second gas valve according to the set temperature desired in the flowing water. This feature saves gas, prevent overheating and lime deposits with hard water, and insures utmost safety.

The thermo control permits using the Type "A" as a reheating system by merely connecting it up to take advantage of heat derived from furnace or other heating plant.

Made in four sizes, as shown in margin. Capacities in gallons per minute delivered at various temperatures are indicated in the tabular data on page 10.

HUMPHREY Automatic Gas Water Heaters, Type "A," with thermo control are the finest equipment obtainable to provide hot water for homes and elsewhere where conditions permit their use.

No. 3A

Capacity, 3 gallons hot water per minute.

Suitable for small homes having only bathroom and kitchen hot water connections.

No. 4A

Capacity, 4 gallons per minute.

Standard size. Recommended for modern homes with bathroom, kitchen and laundry requirements.

No. 6A

Capacity, 6 gallons per minute.

Adapted for dwellings with two or three bathrooms, and one or more hall or bedroom lavatories. Suitable for duplex apartments.

No. 8A

Capacity, 8 gallons per minute.

For large dwellings with three to six bathrooms, and several lavatories, or small hotels, restaurants, small apartment houses, etc.

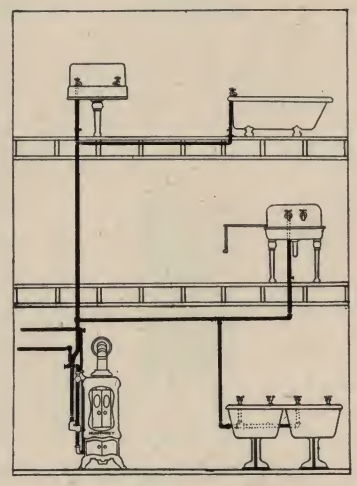
NOTE—Under conditions of exceptionally low water pressure or very limited gas supply, HUMPHREY Type "A" Automatics should not be used. Such conditions, however, are rarely encountered. When they are to be contended with, HUMPHREY Automatic Storage Systems are available.

Model Installations of HUMPHREY Automatic Heaters Type "A"

The installation of a HUMPHREY Automatic Gas Water Heater Type "A" in the majority of cases is comparatively simple. However, such conditions as water pressure, character and arrangement of building, and type of plumbing system in use, influence each individual installation.

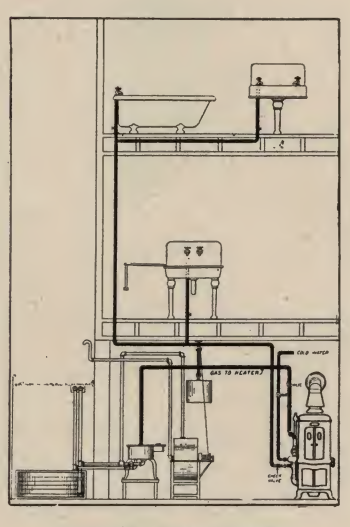
In the margins are illustrations and suggested methods for installing HUMPHREY Heaters in connection with the more common types of plumbing systems.

Wherever possible, the Re-heating System of taking advantage of the furnace coil, boiler or coal range in winter, should be used.



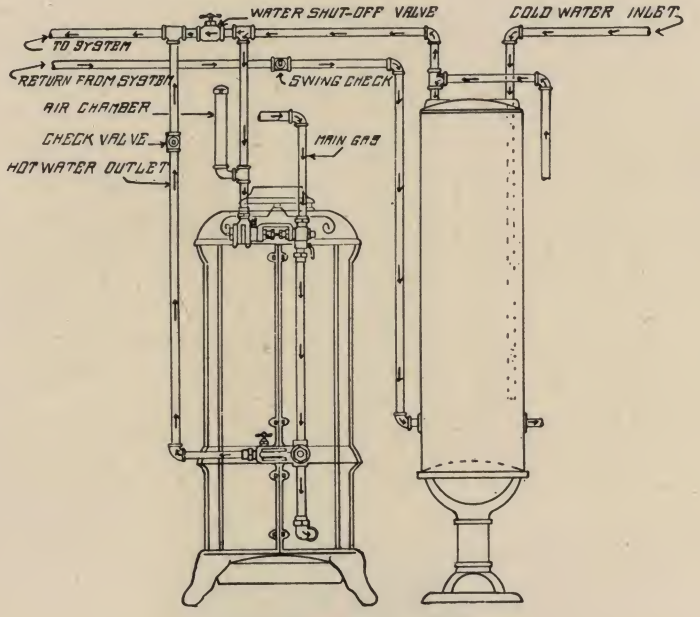
Type "A" Direct System

Installed on direct system of plumbing. Heater is connected direct to cold water main and supplies hot water all over the house.



Type "A" Direct System

Installed on direct system of plumbing, with gas supplied from gasoline gas generator. Recommended for country homes, summer resorts, farms, etc., without city gas and water pressure.



Type "A" Re-heating System

Used in connection with storage tank. Lessens strain on heater, saves gas. Cold water supply taken from tank instead of direct from cold water main. Cold water entering tank from main is tempered to the extent of difference between temperature in cold water main, say 40 degrees, and the temperature in the room where tank is located, perhaps 70 degrees F. This difference varies.

Installation of Humphrey Automatic Heaters Type "A"

No. 1— *Capacity Required.* Make sure that the HUMPHREY Automatic Type "A" specified or sold is of sufficient capacity to meet the maximum demand. Selection should be a size larger than that barely ample to fill the requirements. Ascertain the number of people to be served, how frequently hot water will be needed and to what extent, as: Baths per person, housework, dish washer, washing machine, and other hot water demands. The size recommendations on page 7 will, if followed, insure abundant service.

No. 2— *Character and Size of Building— Layout of Fixtures.* Inquire as to the size and general arrangement of the home, whether one-, two- or three-story; the number of bibbs to be supplied and their location. This gives you the height and length of runs of hot water piping and checks up on the adequacy of the size heater specified to supply the requirements. Always place in such a location as to insure the shortest distance of water travel between heater and faucets. In large residences it is often desirable to divide the fixtures into groups, using one heater for each group rather than one large size for all; thus securing quicker service at the more distant faucets. This improves the service by shortening the hot water travel from heater to faucet, and lessens the amount of water that must be emptied from the hot water lines when an infrequently used faucet is opened. Insulate the hot riser and hot water lines from heater. This improves the service and reduces the gas consumption. Insulation cost is a fraction of the saving effected.

No. 3—*Location of Heater.* Heater should be located as close to the point of most frequent use as flue and other conditions permit. This is generally under or near the kitchen faucet.

No. 4—*Water Pressure.* Should be sufficient to overcome friction of travel through heater and piping, and deliver rated capacity of heater at highest hot water outlet. This requires 20 lbs. pressure at highest faucet. To ascertain the working water pressure, multiply the constant .43 by the height in feet of the highest hot water faucet above the ground. Subtract the result from the water pressure of the street main; or in a house tank system, from the pressure at the basement. This insures a heater exactly suited to working pressure.

No. 5—*Cold Water Connection.* Cold water supply should be as large, if not larger, than the inlet connection of heater, and for Direct System of installation taken direct from the cold water main. If pressure is low, pipe a size larger than heater inlet should be specified.

For Re-heating System of installation see diagram on page 8 and Model Specifications on this page. Also consult table on page 10.

No. 6—*Gas Connection.* Gas supply should be taken direct from meter to heater and be large enough to supply the amount required by the size of heater to be used. It never should be smaller than specified in directions furnished with each heater.

If gas line is over 100 feet long, use pipe a size larger than called for. See table page 10.

No. 7—*Hot Water Connection.* Connect heater hot water outlet with nearest point in hot water line. A check valve should be placed in it as close as possible to the outlet connection of heater. This will prevent draining hot water lines which causes what is known as "reaction". Hot water lines should be slightly, if any, larger than required to carry amount of water that a faucet can deliver. Hot water line should not be made larger than heater outlet as given in table on page 10.

Before hot water is delivered at the faucet, the cold water in this line must be discharged. Increasing size of this pipe delays the delivery of hot water at the faucets proportionately. It is sometimes desirable where large heaters are used to run a separate small line to a frequently used faucet.

No. 8—*Flue Connection.* An independent flue is desirable and should be provided in new houses. It should be located after the location of the heater is determined, if possible. If necessary, the heater may be vented into a flue which vents another appliance. When that is done, make the connection at an easy angle so that the operation of one will not interfere with the draft of the other appliance.

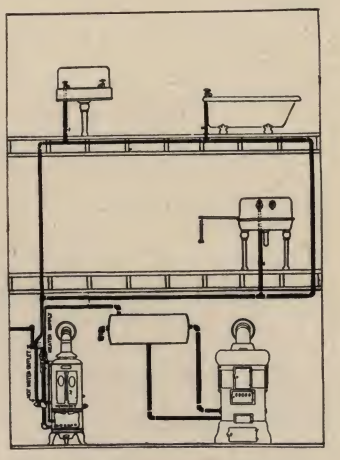
Model Specifications of HUMPHREY Automatic Heaters Type "A"

Furnish and install complete where shown on plans (No. 3), one (or the number of heaters, No. 2) No. . . . . HUMPHREY Automatic Gas Water Heater to operate on a water pressure of . . . . . pounds (No. 4) per square inch at highest hot water faucet. Run separate gas line of . . . . . inches (No. 6 and Table page 10) black pipe direct from gas meter to gas inlet of heater, placing flat head ground gas cock and union of same size as line, in the line close to heater, with union between cock and heater. Connect vent of heater into chimney hole marked on plans, using . . . . . inch pipe (No. 8 and Table on page 10) made of . . . . . (insert gauge of iron) black (or galvanized) iron. Place HUMPHREY draft hood in vertical run of pipe, just below the elbow.

For "Direct System," run cold water line of . . . . . inch (No. 5 and Table page 10) galvanized iron pipe from cold water main of house at a point nearest to heater direct to heater cold water inlet. Place globe valve and union of same size as line, in line, with the union between globe valve and heater inlet.

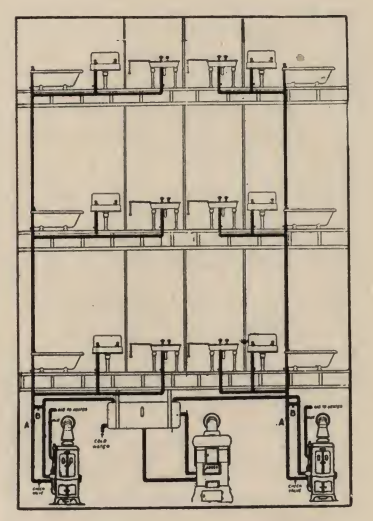
For "Re-heating System" run line from a point on the hot water line after it leaves the boiler, and before the first branch is taken off, direct to heater inlet of . . . . . inch (No. 5 and Table page 10) galvanized iron pipe. Place in the line, a globe valve and union of the same size as the line, with the union between globe valve and heater. In main hot water line, between the points where the line to the heater and the first branch to a fixture are taken off, place a globe valve of the same size as the hot water main. To make hot water connection, run hot water line of . . . . . inch (No. 7 and Table page 10) galvanized iron pipe from hot water outlet of heater direct to hot water main of house. Place in line close to heater, check valve and union of same size as line, with the union between check valve and heater.

Read carefully instructions furnished with heater before lighting Pilot.



Type "A" Re-heating System

Installed in connection with furnace coil and the boiler in basement. Thermostatic regulation of gas in proportion to the heat required by the water, takes advantage of heat derived from heating system in winter. Recommended wherever possible.



Type "A" Re-heating System

In six-apartment building in connection with boiler heated by coil installed in house heating plant. Also shows method of installing two smaller heaters and grouping fixtures instead of using one larger heater.

Type "A" Installation Data

Why HUMPHREY Excels

Provides an abundant, clean, fresh, steady flow of hot water, at unchanging temperature, at a turn of the faucet — 10 gallons for about one cent.

Entirely automatic — saves trouble, time and fuel.

Built *up* to highest service standards, not *down* to a price.

Simplified design and finest materials and workmanship insure continuously carefree service, year in and year out. Durable, dependable, always ready.

Improves health through increased cleanliness.

Efficient and economical — secures 100% heat from gas burned — supplies hot water *only as needed.*

Eliminates trouble of lighting, fire tending and fire regulation.

Reduces fire risk.

Causes no discomfort in hot weather.

Requires no storage room for fuel or ashes.

Adds more to the comfort and happiness of the family than any other household convenience.

Embodies exclusive, patented features not found in any other water heating equipment.

Because of close, accurate control of water temperature at the outlet point, lime deposits are prevented where hard water is used.

Sediment does not accumulate to lessen efficiency and increase operating cost. Heating coils are flushed out each time hot water is drawn.

HUMPHREY has stood for supreme service in Hot Water Supply for nearly thirty years.

Sizes, Dimensions and Capacities

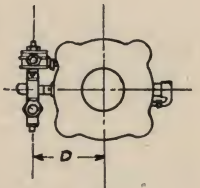
SIZE OF HEATER	No. 3-A	No. 4-A	No. 6-A	No. 8-A
Height in inches	44	47	52	59
Diameter of Shell only	16	20	22	25
Diameter of Shell, including Valve	25½	28½	32	35½
Diameter of Copper Coils, inches	¾	¾	⅞	⅞
Length Copper Coils, feet	74	100	124	156
Size Flue Pipe, inches	5	6	7	8
Number of Burners	12	16	24	32
Gas Supply from Meter, inches	1	1	1½	2
Size Gas Meter Lights	20	30	45	60
Gas Consumed per min., cu. ft.	3	4	6	8
Heats per min. 63° raise, gals.	3	4	6	8
Number of faucets supplied, not more than	3	8	14	22
Net Weight	220	266	394	452
Approximate Shipping Weight	295	350	490	580

Gallons per Minute at Various Temperatures

SIZE OF HEATER	No. 3-A	No. 4-A	No. 6-A	No. 8-A
50°	3.78	5.05	7.58	10.10
60°	3.15	4.20	6.30	8.40
70°	2.70	3.60	5.40	7.20
80°	2.36	3.15	4.73	6.30
90°	2.10	2 80	4.20	5.60
100°	1.89	2.52	3.87	5.04
110°	1.72	2.29	3.52	4.59
120°	1.58	2.10	3.23	4.20
130°	1.45	1.94	2.98	3.88
140°	1.35	1.80	2.76	3.60
150°	1.26	1.68	2.58	3.36

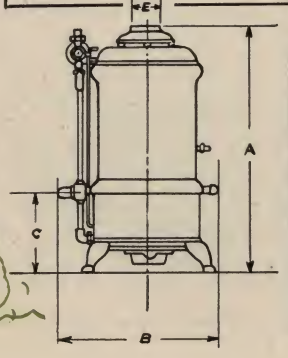
Fitter's Specifications

SIZE OF HEATER	No. 3-A	No. 4-A	No. 6-A	No. 8-A
Water Inlet	¾″	¾″	¾″	¾″
Water Outlet	½″	½″	¾″	¾″
Gas Supply	1″	1″	1½″	2″
Size of Gas Meter	20 lt.	30 lt.	45 lt.	60 lt.
Size of Flue	5″	6″	7″	8″
Adjust Water Flow to gals. per min	3	4	6	8



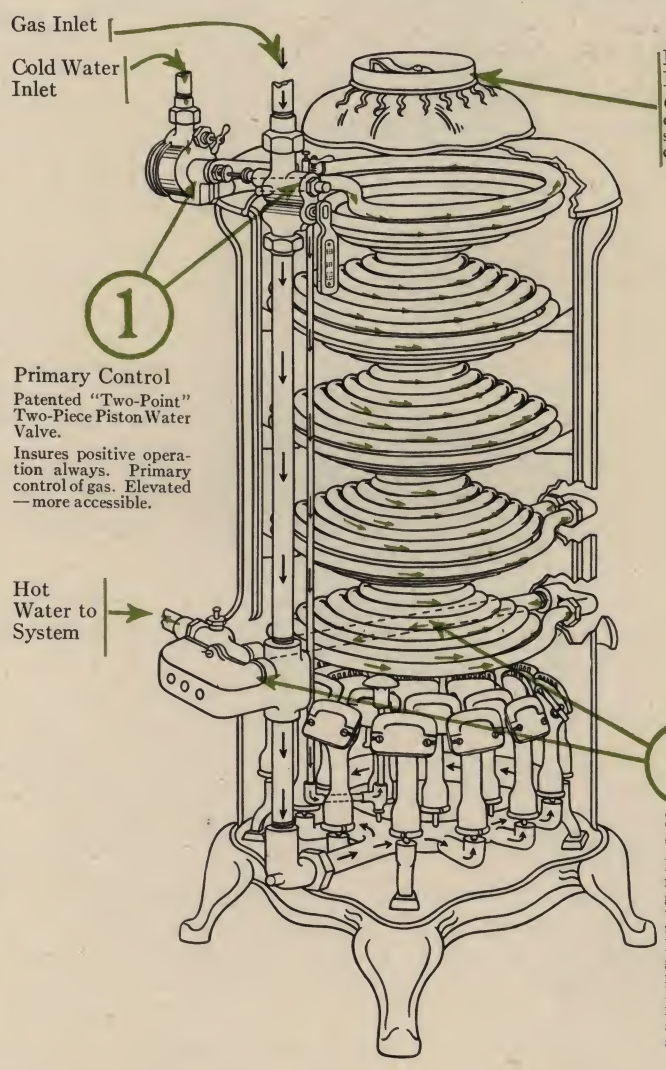
Roughing-in Dimensions

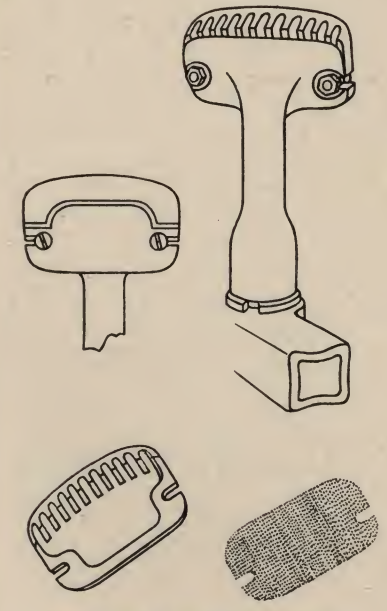
HEATER	No. 3-A	No. 4-A	No. 6-A	No. 8-A
A	44½″	47″	51½″	58¼″
B	26″	28″	30″	33″
C	16½″	16¾″	17½″	18″
D	10½″	11½″	12½″	14″
E	5″	6″	7″	8″



Where there are very heavy demands at different faucets, or long runs of piping, better service is assured by dividing the fixtures among two smaller heaters rather than one larger size for all. For apartments, calculate a need of 3 gallons per minute per bathroom and specify a heater two-thirds the capacity determined, as not more than two-thirds of faucets will be used simultaneously. An apartment building with 4 one-bathroom apartments would need 12 gallons per minute — or a No. 8A Heater.

Technical Sketch Showing "Double Control"





View and Assembly of Bunsen Flame Burner

Patented Bunsen Burners, which produce 100% heat from gas burned. Cannot corrode, "flash back" or clog. A battery of these individual burner-units are mounted on the Gas Rings.

Detachable Lower Coil Section
Seamless Construction

Heavy gauge, seamless copper tubing, machine wound; greatest possible heating surface; tested to 600 pounds pressure. Lower section can be easily detached and removed for replacement or for cleaning out sediment, lime deposits, etc.

Superior Mechanical Features

ALL the user has to know about a HUMPHREY Automatic Heater is — *"Turn the faucet!"* The way Humphreys are designed and built insures carefree service and continued satisfaction. Simplicity has been the keynote of HUMPHREY Design.

"DOUBLE-CONTROL" in all HUMPHREY Automatic models is an important and decidedly superior feature. The diagram above illustrates this "Double-Control" principle.

Notice the direction of the green arrows, representing the travel of water through the heater. The black arrows indicate the gas passage from gas inlet through first gas valve, then through the tiny pilot and second gas valve to the gas ring and then to the burners.

Entering at the water inlet (above) cold water passes through water valve, down the coils where it gets heated, and then passes through thermostat tube to the hot water outlet.

Figures 1 and 2 in the diagram show the Double Control — first, the patented valve which insures positive operation, opening or closing the gas

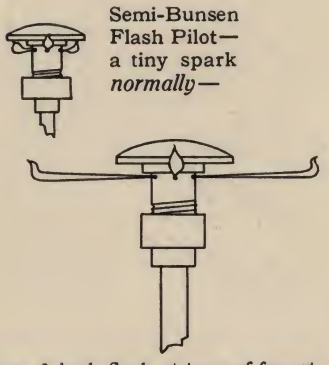
inlet — second, the HUMPHREY Thermostat which permits a full gas flame when cold water starts flowing, and then automatically closes the gas valve when the out-flowing water reaches 140 degrees Fahrenheit (or whatever temperature the thermostat is adjusted for).

Every part of the HUMPHREY is easy to get at. This accessibility simplifies installations as well as adjustments and helps increase the operating efficiency to each unit.

The Bunsen Burner, as adapted to HUMPHREYS, insures 100% heat from gas burned, and eliminates the sources of troubles which tend to cause "flashing back", clogging and "burning out". The HUMPHREY Bunsen Burner prevents danger of excessive operative costs. It is designed to obtain maximum heating efficiency, regardless of varying gas pressures, condensation, dust and other conditions which make ordinary burners fail.

Three parts, made of grey iron and brass, assembled with two brass bolts — that's all there is to this burner. (See drawing below.) A battery of these burners sets squarely over the brass spuds on the burner-ring (instantly removable for cleaning). This burner construction extends the blue flame into a full sheet of heat over the sensitive copper coils, which are wound in spiral layers so as to expose maximum heating surface. So efficient is the HUMPHREY arrangement of these pure copper coils that tests prove 87% of heat developed by the burners is absorbed by water passing through the heater.

All this copper tubing is evenly spaced and seamless. It is sturdy — made from 17 and 18-gauge copper, factory-tested to 600 pounds per square inch, hydrostatic pressure. The lower coil section is still heavier and is easily removable for replacement or cleaning if necessary.



Semi-Bunsen Flash Pilot— a tiny spark *normally*—

Gives 2-inch flash at turn of faucet

Another major feature of the HUMPHREY which has gained overwhelming approval by all having experience with gas water heaters, is the patented Flash Construction Pilot. This type combines both the economy of the tiny spark, and the advantage of not blowing out through the rush of gas from the burners. The moment the faucet is opened, the gas valve shoots a larger volume of gas down the pilot feed pipe and flashes a 2-inch flame just before the burners receive gas. Semi-Bunsen, does not soot the coils.

Other Practical Humphrey Features that You Will Appreciate

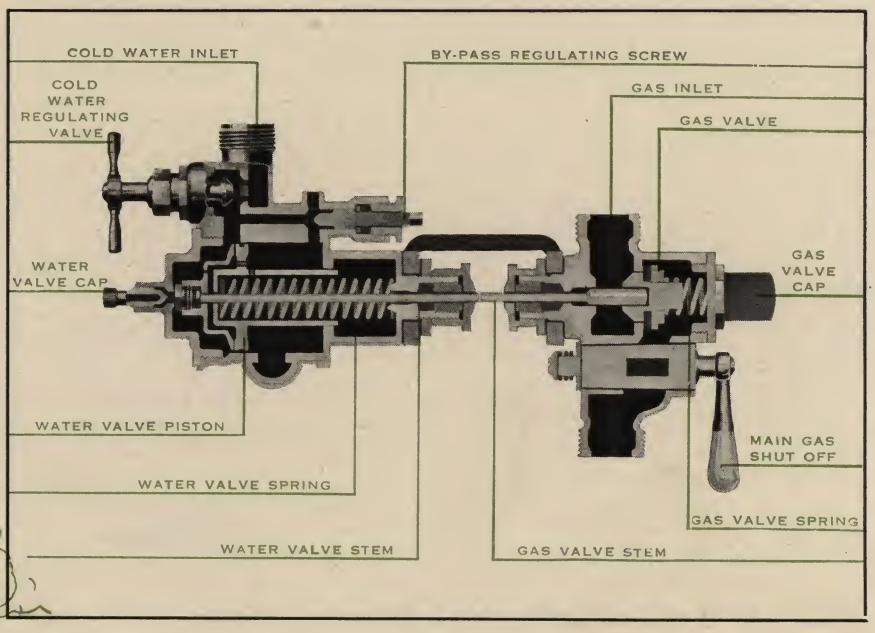
Unions — Furnished on all inlet connections — no extra cost.

Jackets — Double cast iron, durable and of handsome design; dead air space between jackets for insulation. This reduces radiation and increases efficiency.

Gas Valve — Positive, cone-shaped, leather-seat valve — easily removable for cleaning. Main gas valve shut-off furnished.

Drain Cock—Large drain cock is provided for cleaning or draining copper coils.

Pilot Adjustment and Control — Size adjustment by needle point screw, concealed by brass cap. Separate from pilot control cock. Pilot control cock has special locking to prevent carelessly being turned on or off.



Humphrey Automatic Gas Water Heaters, Pressure Valve Type

IN every respect the operation of this type is identical with the Type "A", except for the thermostatic control. In material and workmanship this Non-Thermostatic Type is of the same high standard as the Type "A".

Application, Sizes and Specifications of Nos. 20 and 25 Heaters

SIZE OF HEATER	20	25
Height in inches	38½	41½
Diameter, Shell only	13	16
Diameter, including Valve	19	23½
Diameter, Copper Coil	⅝″	⅝″
Length, Copper Coil	60 ft.	70 ft.
Size Flue Pipe	4″	5″
Number of Burners	9	12
Gas Supply from Meter	¾″	1″
Size Gas Meter	10 lt.	20 lt.
Burns gas, cu. ft. per min.	2	2½
Heats per min. 63° Rise	2 gal.	2½ gal.
Faucets Supplied, not over	2	3
Net Weight	138	167
Approx. Shipping Weight	168	205

Fitter's Specifications

SIZE OF HEATER	20	25
Water Inlet	½″	½″
Water Outlet	½″	½″
Gas Supply	¾″	1″
Size of Gas Meter	10 lt.	10 lt.
Size of Flue	4″	4″
Adjust flow, gal. per min.	2	2½

Installation made in the same manner as for HUMPHREY Type "A" Automatics. Installation Data is given in detail on Pages 8 and 9.

HUMPHREY Non-Thermostatic Heaters No. 20 and No. 25 deliver hot water automatically at the turn of the faucet, and are of the same standard design and high quality as the Type "A" Heaters, except for the lack of Thermal Control.

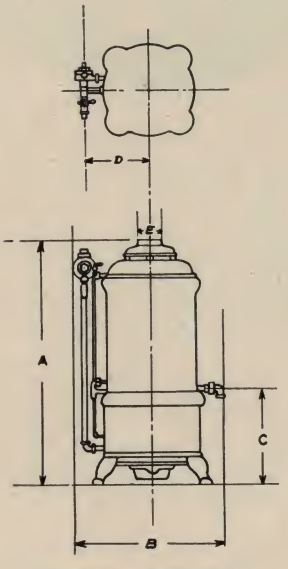
Suitable for small dwellings with bathroom, laundry and kitchen service.

(See Cross-sectional View at bottom of Page 12.)

The cross-sectional view shows just how the exclusive HUMPHREY Automatic Water Valve operates with its Patented "Two-piece, Two-point" Suspension Piston and adjustable By-Pass Temperature Control.

Capacity at Different Temperatures

HEATER	20	25
50°	2.57	3.78
60°	2.09	3.15
70°	1.80	2.70
80°	1.57	2.36
90°	1.40	2.10
100°	1.26	1.89
110°	1.15	1.72
120°	1.04	1.58
130°	.97	1.45
140°	.90	1.35
150°	.84	1.26

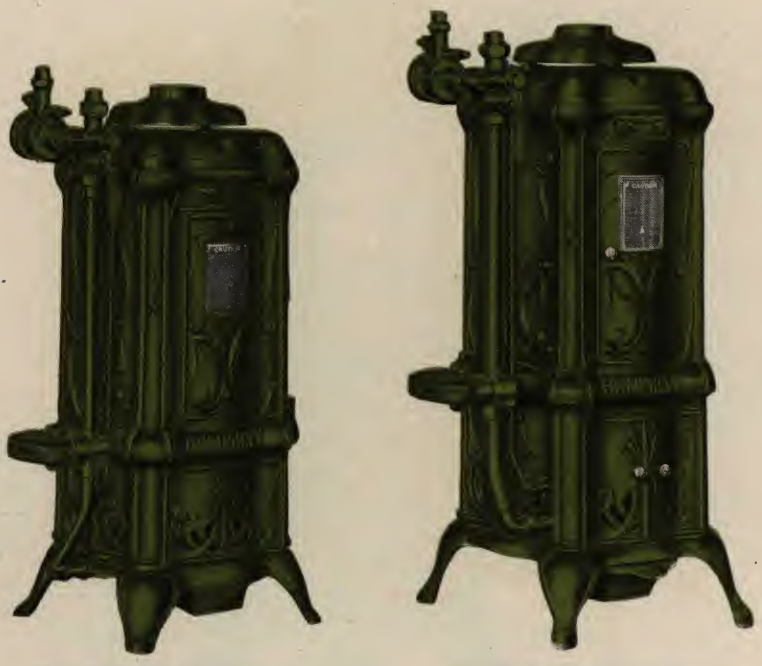


Plan View for Roughing-in Dimensions.

Roughing-in Dimensions

HEATER	20	25
A	39″	42″
B	17½″	24″
C	14″	16⅜″
D	8″	10¼″
E	4″	5″

Humphrey Hot Water Service means health for every member of the household. Cleaner bodies, more sanitary rooms, cleaner clothing, cleaner dishes and utensils, make happier, healthier families. Abundant hot water is now considered not only a luxury but a *necessity* in the modern home.



No. 20-A with Thermostat

No. 25-A with Thermostat

These are the latest developments of the HUMPHREY Automatic Instantaneous Water Heaters. A new line of two and two-and-a-half gallons per minute capacity.

The Humphrey "Utility Four" Line

EXCEPT in size and capacity, the Utility Four are each identical in design, finish and appearance, and in construction and service, with the larger famous HUMPHREY AUTOMATIC WATER HEATERS that are steadily giving such perfect hot water service and satisfaction in thousands of homes.

It is the high-quality equipment, at prices small home owners can pay, which has been needed so long to provide hot water service at the turn of a faucet — constant, abundant, economical hot water for small homes, apartments, bungalows and cottages.

The average small home owner needs and wants as dependable hot water service as people with big homes. He is willing to pay for it when convinced that he is being offered genuine quality and service that is abundant, practical and economical.

The most careful examination will show a superiority in completeness and simplicity; a superiority in design indeed surprising in its effects on efficient operation, and durable, lasting, trouble free and economical service.

Every Utility Four casing is built of high-grade grey iron castings. The upper section is double, with a large dead-air space for insulation. This keeps down heat loss by radiation and adds to economy of operation. A sliding drip pan, removable for emptying, provides for the collection of condensation.

Front and rear doors simplify inspection and cleaning.

Heating coils are of 18-gauge seamless copper tubing tested both before and after forming into shape.

Burners. HUMPHREY super-efficient burners are made of high-quality, grey iron castings; there are only two pieces to each burner, with flat perforated

No. 20 By-pass Control

No. 25 By-pass Control

Superior Value in Every Way Guaranteed:

Superior Design and Finish
Superior Construction
Superior Completeness
Superior Durability
Superior Economy
Superior Usefulness

brass flame check. Burner ring has brass spuds on which the individual HUMPHREY Bunsen burners are placed.

Automatic mechanism contains sensitive HUMPHREY true-travel "two-piece, two-point" suspension Water Valve Piston. Separated stems, concealed packing adjustments, and other practical features insure long and satisfactory service.

Temperature Control. The No. 20-A and 25-A are equipped with a Heat Zone Thermostat, operating through an individual gas valve, the superior features of which have been proven through many years of use.

The Nos. 20 and 25 contain the HUMPHREY Patented By-pass Temperature Control, which, like the Heat Zone Thermostat, is also of proven effectiveness.

Triple Gas Control. Only in HUMPHREY construction is the triple gas control to be found.

Appearance. In shape, in design and in finish, each of the HUMPHREY Utility Four Heaters is distinctly superior.

For Installation Data on No. 20-A and No. 25-A HUMPHREY "Utility Four" Heaters, consult Type "A" Installation Data.

For Installation Data on No. 20 and No. 25 HUMPHREY "Utility Four" Heaters consult Page 13.

Specifications

No.	Capacity Gallons per minute	Size of Water Connection	Size of Gas Inlet	Size of Flue	Size of Gas Meter	Net Weight	Shipping Weight
20	2	½	¾	4″	10 Lt.	176	220
20-A	2	½	¾	4″	10 Lt.	185	226
25	2½	½	¾	4″	10 Lt.	217	264
25-A	2½	½	¾	4″	10 Lt.	221	269

Give Demonstrations — Special Sales

The most successful way to turn a big volume of *sales* is to invite people in for a demonstration. The public wants to be shown, likes to see how Humphreys operate, and finds actual demonstrations fascinating. Once in your store, prospects are easily sold by a brief demonstration.

Wherever heavy-duty, strenuous, big-volume hot water service is demanded, the Humphrey Multi-Coil Storage System will serve the requirements adequately, regardless of the layout of fixtures, number of faucets on line, or load per hour.

Residences with two or three baths, one shower bath, kitchen, pantry and laundry. Flat buildings with three to six apartments of 4 or 6 rooms each. (With 80, 100 or 150-gallon boilers.)

Residences with three to six baths, one or two showers, kitchen, pantry, laundry, etc. Flat buildings with 6 to 12 apartments, averaging 5 or 6 rooms, kitchen and bath in each. Small hotels with 3 to 5 baths, not more than 10 bedroom lavatories, kitchen, laundry, etc. (With 100, 150, 200, 250 or 300-gallon boilers.)

Residences having 8 to 15 baths several showers, bedroom lavatories. kitchen, butler's pantry, laundry, etc. Flat buildings having 10 to 18 apartments, averaging 7 rooms and bath. Hotels having 4 to 10 baths, not over 50 bedroom lavatories, kitchen, large laundry, etc. Small gymnasiums, having not more than 10 to 15 hot water outlets and membership of no more than 200. (With 200, 250, 300 or 365-gallon boilers.)

Large hotels, large hospitals, office buildings, bath houses, large gymnasiums and other places requiring immense quantities of hot water. (With 425, 500, 600, 700 or 800-gallon boilers.)

Humphrey Multi-Coil Automatic Storage Systems

HUMPHREY Multi-Coil Storage Systems deliver hot water *instantly* to any or all hot faucets opened. This system automatically maintains in an insulated boiler sufficient hot water (of desired temperature) to serve the maximum demand as calculated. Whenever the temperature in the storage boiler drops 20 degrees, the gas in the Heater automatically is turned on and burns full-flame until the water in the boiler is restored to pre-determined temperature. At that temperature the HUMPHREY Thermostatic Moment Valve automatically shuts off the gas — entirely automatic; no labor expense or attention; no dirt or ashes.

The heavy insulation of the boiler prevents undue loss of heat. This system is very practical and economical in operation.

Made in sizes and combinations from 80-gallon systems upward (capacities measured boiler capacity plus rated capacity of Heater). Especially adapted to tank water supply or other low water pressure conditions. Excellent auxiliary to steam plant in apartment buildings or commercial and industrial institutions where there is no hot water in summer.

Standard HUMPHREY long-life construction; patented economy features; special independent and detachable copper heating coils, without any brazed joints; easily removable for cleaning or replacement. Coils absorb maximum heat from powerful Bunsen Burners; chimney heat losses practically eliminated. Patented Moment Valve insures great economy.

Installation of Humphrey Multi-Coil Storage Systems

NO requirement for hot water service is too heavy for the HUMPHREY Multi-Coil Storage System. Regardless of the number of faucets to be served at the same time, it can be adapted in a combination storage system that will be adequate. Big office buildings, hospitals, hotels and similar buildings are finding that this type of HUMPHREY equipment renders ideal hot water service economically.

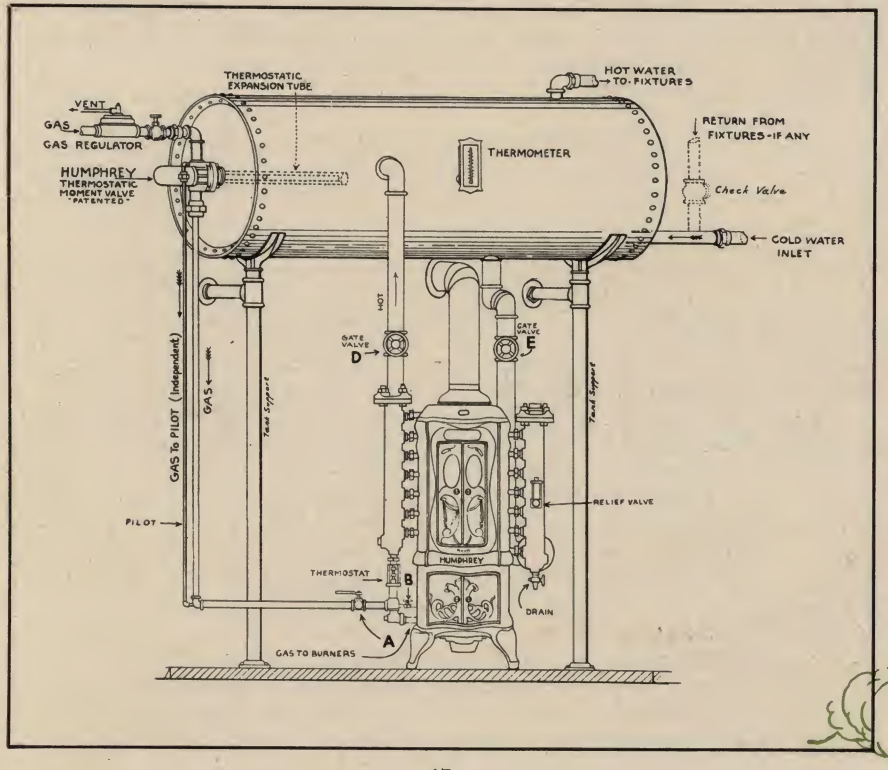
Study the diagrams here and on following three pages.

Dimensions and Capacities

Heater No.	100	200	300	500
Height in inches	39	44	47	59
Diameter, inches	13	16	20	25
Circulators between Boiler Heater, inches	1½	2	2	2½
Size Gas Supply Pipe, inches	¾	1	1	2
Size Gas Meter	10 lt.	20 lt.	30 lt.	60 lt.
Size Flue Pipe, inches	4	5	6	8
Size Cold Water Inlet, inches	1	1	1¼	2
Use with Tanks, gals	80 to 150	100 to 300	200 to 365	425 to 800
Capacity per hour, gals	100	200	300	500

Diameter of Coils

Heater No.	100	200	300	500
Number of Coils	6	7	7	7
Diameter of Lower Coil	⅞	1	1⅛	1¼
Diameter of Second Coil	⅞	1	1⅛	1¼
Diameter of Third Coil	⅞	1	1	1⅛
Diameter of Fourth Coil	⅞	⅞	1	1⅛
Diameter of Fifth Coil	⅞	⅞	⅞	1
Diameter of Sixth Coil	⅞	⅞	⅞	1
Diameter of Seventh Coil		⅞	⅞	⅞



For Every Type of Building

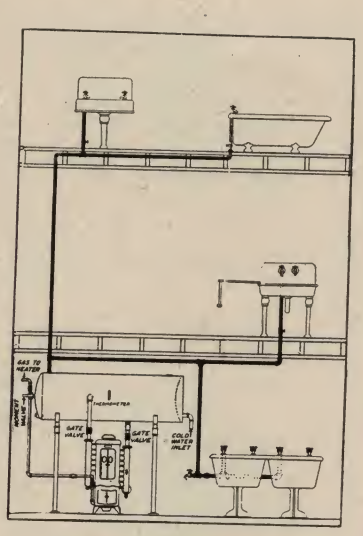
for Homes

for Buildings

for Apartments

Recommend this type for apartment buildings, hospitals, schools, office buildings, hotels, bath houses, gymnasiums, large residences, commercial and industrial institutions, and similar buildings where the demand for hot water comes in big volume and may come from several parts of the building at the same time.

Multi-Coil Installation Data



HUMPHREY Storage System
installed on
Direct System of Plumbing

Please note that on pages 18 and 19, Model Numbers 2-C, 3-C, 4-C, and 8-C should appear respectively as Numbers 100, 200, 300, and 500.

Formerly these same models were designated as Numbers 2-C, 3-C, 4-C, and 8-C; but from now on they always should be designated as Numbers 100, 200, 300, and 500, just as shown in tabular data on page 17.

No. 1—*Size Required.* Multi-Coil Systems should always be large enough to care for the maximum demands — or the peak loads of the installation. The greatest hot water requirement per hour must be provided for so that the system will be able to adequately meet the demand of the heavy hour or hours.

No. 2—*Capacity.* The storage capacity of the boiler *plus* the rated capacity of the Heater is the capacity of each system with the various combinations of boilers.

No. 3—*To Determine Proper Size of System:* Learn the intervals of and duration of heaviest demand—the per minute flow of each fixture to be supplied — then estimate the probable use of each fixture during this time. In large residences, these rules will prove valuable. For recommendation of proper size of system, however, it is always best to submit complete plans to main office in Kalamazoo.

One bath requires 20 gallons of hot water; figure maximum of three baths per hour.
Showers usually use two gallons per minute.
Washstands estimate 5 gallons per hour.
Kitchen sinks estimate at 20 gallons per hour.
Laundry tubs estimate at 60 gallons per hour.

The different jobs can be supplied approximately as given in the Table of Sizes and Application on page 17.

No. 4—*Location.* System should be located as close to the point of most frequent use as flue and other factors will allow.

No. 5—*Gas Connection.* Where gas line is over 100 feet long, specify pipe a size larger than given in the specification table herein.

No. 6—*Hot Water Connection.* Should not be larger than outlet tapping of tank, unless conditions specifically permit otherwise. When return circulation line is not specified, water in this line should be discharged at faucet before hot water is delivered. Increasing size of this pipe delays delivery of hot water in direct ratio. Often it may be desirable to run a separate small line to a frequently used faucet.

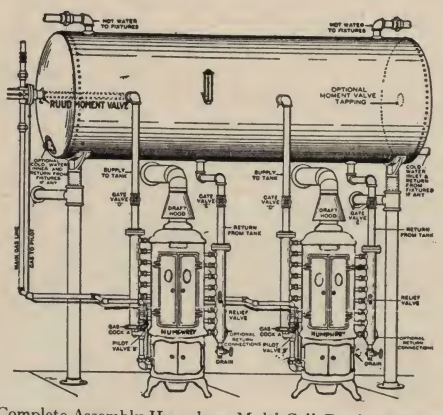
No. 7—*Cold Water Supply.* Run cold water line of....inch galvanized iron (brass or copper) pipe, direct from cold water main of building to inlet tapping of tank.

No. 8—*Hot Water Supply.* Run hot water line (or lines) of .... inch (see No. 6) galvanized iron (brass or copper) pipe, from outlet tapping (s) of tank direct to hot water piping of building.

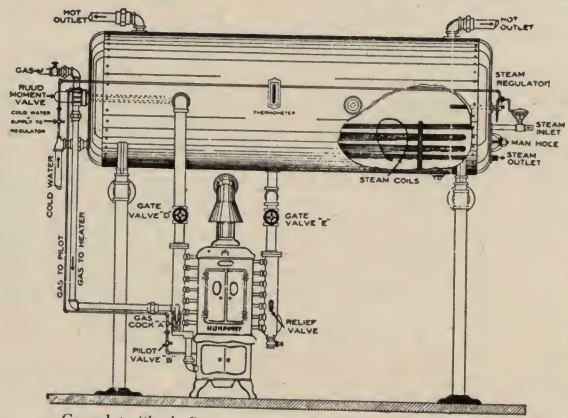
Humphrey Duplex Multi-Coil Storage Systems

2—No. 2-C with 500 gallon boiler.
2—No. 3-C with 600 to 800 gallon boiler.
2—No. 4-C with 700 to 900 gallon boiler.
2—No. 8-C with 800 to 1000 gallon boiler.

Black Iron Boilers are furnished regularly with Duplex Systems. All others special.



Complete Assembly Humphrey Multi-Coil Duplex System



Complete Single System Assembly with Steam Coils in Tank

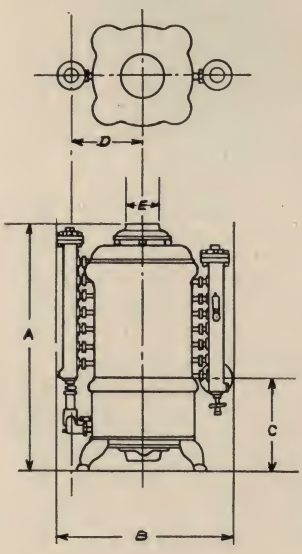
No. 9—*Gas Supply.* Run separate gas line of .... inch (see No. 5) direct from gas meter to inlet of moment valve with .... inch gas cocks in the line, and a union between gas cock and moment valve.

No. 10—*Flue Connection.* Connect vent of heater to flue as indicated on plans (see No. 13), using....inch pipe made of No. .... (insert gauge wanted) black (or galvanized) iron. Insert HUMPHREY draft hood in vertical run of pipe as high as possible.

No. 11—*Steam Coils.* (When requested.) Tank herein to be fitted with copper (brass or galvanized iron) at factory before shipment and equipped with Hand-hole (or Manhole in the iron boilers).

No. 12—*Steam Regulator.* (When requested.) Furnish and install with all connections on steam line supplying coils in tank, one....inch Automatic Steam Regulator.

No. 13—*Flue Connections.* A connection to a flue with a good draft is important in a Multi-Coil Storage System. Wherever possible, an independent flue should be provided. The system may be vented to flue used by another appliance, but in this case it must have sufficient draft to carry both appliances.

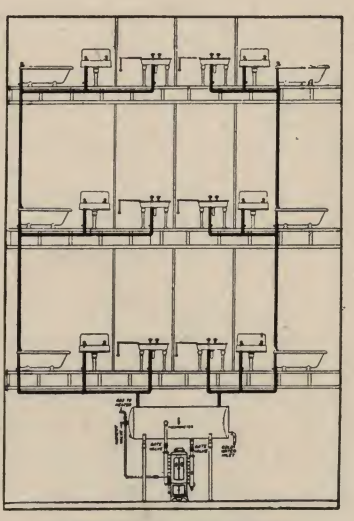


Humphrey Thermostatic Moment Valves

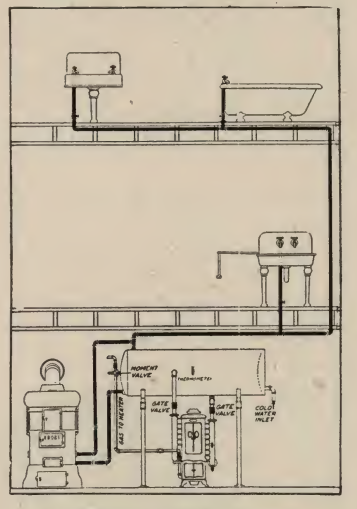
Size of Valve	Standard with Heater No.	Boiler Tappings required	Total Length	Length Ins. Boiler	Weight Crated Lbs.	Weight Net Lbs.
1″	2C-3C	1½″	42½″	30½″	75	29
1½″	4C	1½″	42½″	30½″	85	33½
2″	8C	1½″	42½″	30½″	95	45

Model Installations of Humphrey Multi-Coil Storage Systems

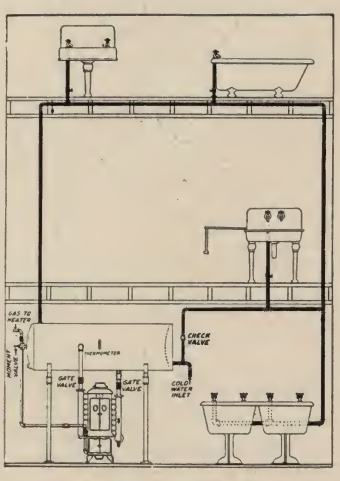
THE diagrams in the margins are suggestive, rather than explanatory, of the more common types of plumbing systems under which HUMPHREY Multi-Coil Storage Systems can be successfully adapted. There are, of course, endless methods and systems of installation, and for this reason it is advisable to submit complete plans or descriptions to the Humphrey Company, Kalamazoo, Michigan, for the best recommendation to serve the specific conditions.



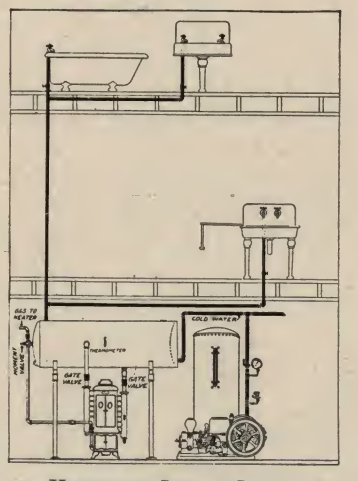
HUMPHREY Storage System installed in Apartment Building



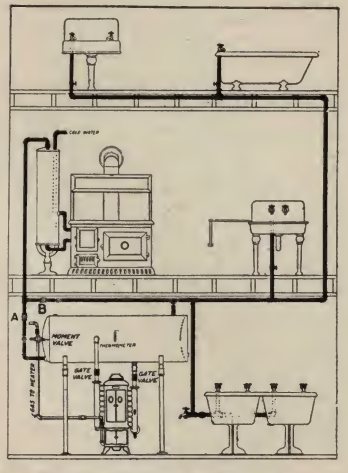
HUMPHREY Storage System installed with Auxiliary Heating Coil in Heating System



HUMPHREY Storage System installed on Return Circulation System of Plumbing



HUMPHREY Storage System installed with water supplied under pressure of Pneumatic Tank



HUMPHREY Storage System installed on Re-heating System in connection with Range Boiler

Installation Data

Storage Combinations Regularly Made and Description of Black Iron and Galvanized Iron Boilers

Boiler Capacity, gallons	80	100	150	100	150	200	250	300	200	250	300	365
Number of Boiler	1	2	4	5	7	8	9	10	11	12	13	15
Diameter of Boiler	20″	22″	24″	22″	24″	24″	30″	30″	24″	30″	30″	30″
Length of Boiler	5′0″	5′0″	6′4″	5′0″	6′4″	8′6″	7′0″	8′0″	8′6″	7′0″	8′0″	10′0″
Number Heaters Tapped for	1	1	1	1	2	2	2	2	2	2	2	2
Cold Inlet to Boiler	1¼″	1¼″	1¼″	1¼″	2″	2″	2″	2″	2″	2″	2″	2″
Hot Outlet from Boiler	1¼″	1¼″	1¼″	1¼″	1½″	1½″	1½″	1½″	2″	2″	2″	2″
Size of Circulators	1½″	1½″	1½″	2″	2″	2″	2″	2″	2″	2″	2″	2″
Thickness of Boiler Shell	¼″	¼″	¼″	¼″	¼″	¼″	¼″	¼″	¼″	¼″	¼″	¼″
Thickness of Boiler Head	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″	5/16″

Boiler Capacity, gallons	300	365	425	500	600	425	500	600	700	800	1000
Number of Boiler	16	17	18	19	20	21	22	23	24	25	26
Diameter of Boiler	30″	30″	36″	36″	42″	36″	36″	42″	42″	48″	54″
Length of Boiler	8′0″	10′0″	8′0″	9′6″	8′6″	8′0″	9′6″	8′6″	10′0″	8′6″	8′6″
Number Heaters Tapped for	2	2	2	2	2	2	2	2	2	2	2
Cold Inlet to Boiler	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″
Hot Outlet from Boiler	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″
Size of Circulators	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″	2½″
Thickness of Boiler Shell	¼″	¼″	¼″	¼″	5/16″	¼″	¼″	5/16″	5/16″	5/16″	5/16″
Thickness of Boiler Head	5/16″	5/16″	3/8″	3/8″	7/16″	3/8″	3/8″	7/16″	7/16″	7/16″	7/16″

Boilers should be ordered by number.
Boilers are equipped when so ordered with Galvanized Iron, Copper or Brass Steam Heating Coils and Handholes or Manholes.

Automatic Steam Regulators for Coils. *Furnished on order, are made in the following sizes:*

Size of Valve	1″	1¼″	1½″	2″
Size of Boiler	100-200 gal.	250-365 gal.	425-600 gal.	700-1000 gal.

Storage Combinations Regularly Made and Description of Copper Boilers

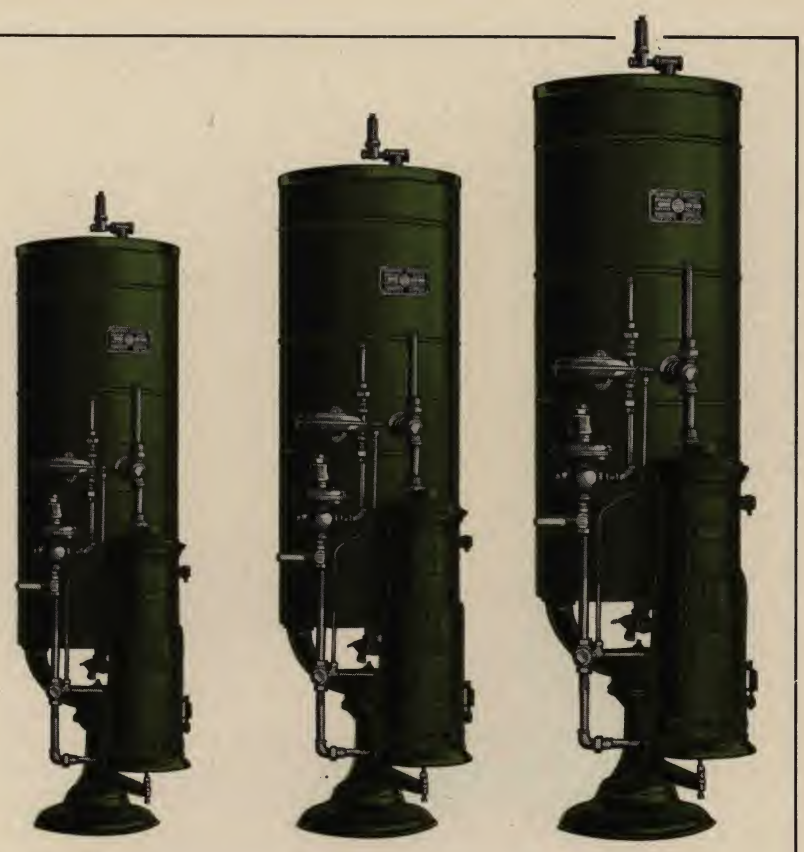
Heater No.	100	100	100	200	200	200	200	300	300	300	300
Boiler Capacity, gallons	80	100	150	150	200	250	300	200	250	300	300
Number of Boilers	1	2	3	4	5	6	7	8	9	10	11
Diameter	20″	24″	24″	24″	24″	24″	24″	24″	24″	24″	24″
Length	59″	60″	78½″	78½″	103″	129″	155″	103″	129″	155″	155″
Number Heaters Tapped for	1	1	1	2	2	2	2	2	2	2	2
Cold Inlet	1¼″	1¼″	1¼″	1½″	1½″	1½″	1½″	2″	2″	2″	2½″
Hot Outlet	1¼″	1¼″	1¼″	1½″	1½″	1½″	1½″	2″	2″	2″	2½″
Circulation	1½″	1½″	1½″	2″	2″	2″	2″	2″	2″	2″	2½″
Standard Test, lbs	200	200	200	200	200	200	200	200	200	200	200
Special Test, lbs	300	300	300	300	300	300	300	300	300	300	300

Boilers can be equipped with Brass or Copper Steam Heating Coils and Round Handhole only. No Manholes can be supplied on Copper Boilers.

Steam Coils for Black Iron, Galvanized Iron and Copper Boilers

Size of Boiler	Copper		Galvanized and Brass	
	Diameter	Length	Diameter	Length
80 gallons	1″	12 ft.	1″	15 ft.
100 gallons	1″	15 ft.	1″	18 ft.
150 gallons	1″	20 ft.	1″	25 ft.
200 gallons	1¼″	23 ft.	1¼″	25 ft.
250 gallons	1¼″	27 ft.	1¼″	30 ft.
300 gallons	1¼″	31 ft.	1¼″	35 ft.
365 gallons	1¼″	40 ft.	1¼″	45 ft.
425 gallons	1½″	40 ft.	1½″	45 ft.
500 gallons	1½″	52 ft.	1½″	55 ft.
600 gallons	1½″	60 ft.	1½″	63 ft.
800 gallons	1½″	80 ft.	1½″	80 ft.
1000 gallons	1½″	100 ft.	1½″	100 ft.

Length given in table will raise temperature of water in boiler seventy degrees (70°) in one hour, using steam at five pounds gauge pressure.



No. 24 with Moment Valve

No. 40 with Moment Valve

No. 66 with Moment Valve

Humphrey Automatic Storage Systems

WITH this type of Humphrey Automatic Water Heater, the water, instead of being heated as used, is stored up in a boiler, ready for use when wanted. This constant supply of stored-up Hot Water, always ready for every need or desire, is available in abundance any time, at any Hot Water faucet. Plenty of Hot Water for every member of the family and for every purpose.

This service is entirely Automatic, needing no care, effort or attention after installation is once made.

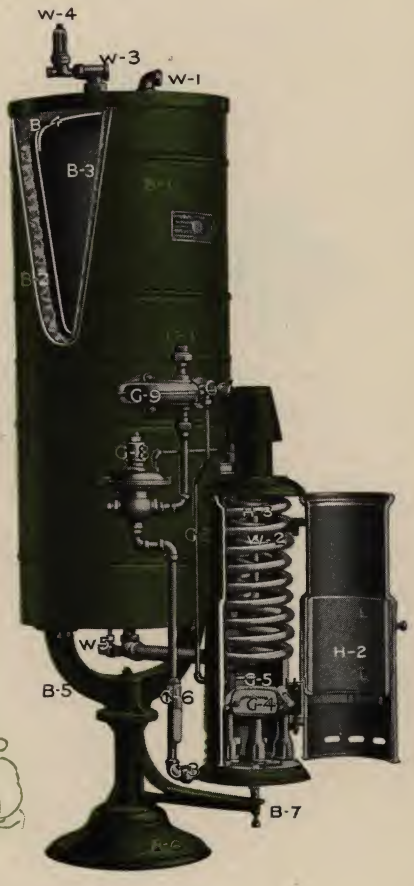
Superior Design — Superior Quality

Humphrey Automatic Storage Systems embody the very highest quality of design, material and workmanship. Their cost, while possibly more than that of less sturdy and less dependable equipment, is moderate indeed. That is especially true when the low cost of operation is compared with maintenance and operation expense of systems designed primarily to sell at a low initial price. The practical design, high-quality materials and expert workmanship insure longest life of usefulness, most abundant and care-free service, at the least cost for fuel.

The Humphrey Guarantee

Humphrey Automatic Storage Systems are guaranteed to remain in perfect mechanical condition, free from defects in materials and workmanship, for a period of two years from date of installation. They are guaranteed to be unequalled in structural design and material qualities and in completeness. Humphrey Automatic Storage Systems properly installed with respect to gas and water supplies and vent will furnish unexcelled Hot Water Service at reasonable cost for gas.

Gas Inlet	G-1
Gas to Pilot	G-2
Main Gas Line to Burner	G-3
Two-Piece Burner	G-4
Pilot	G-5
Main Gas Shut-Off	G-6
Pilot Shut-Off	G-7
Adjustable Gas Regulator	G-8
Patented Thermostatic Moment Valve	G-9
Cold Water Inlet	W-1
Copper Coils	W-2
Hot Water Outlet	W-3
Safety Blow-Off	W-4
Drain Cock	W-5
Heavy Japanned Sheet Metal Jacket	B-1
Extra Heavy Granulated Cork Insulation	B-2
Boiler, Extra Heavy Galvanized	B-3
Copper Brazed Seams	B-4
Heavy Support Arch	B-5
Heavy Iron Base	B-6
Heater Support	B-7
Spring Closing Front Half Door	H-1
Cast Iron Lining Dead-air Insulator	H-2
Efficient Heat Baffle	H-3



Humphrey Automatic Storage Systems

Description of Parts

Each HUMPHREY Automatic Storage System is furnished as a complete unit, consisting of Boiler, or Storage Tank, connected up with a HUMPHREY removable copper coil Heater and Thermostatic Moment Valve Gas Control.

The Boiler: A double, extra-heavy, high-pressure boiler, galvanized and copper-brazed — the best that can be built — is typical of HUMPHREY construction. The boiler walls are $\frac{3}{16}$-inch thick with $\frac{1}{4}$-inch ends, made of galvanized Armco Iron, the most enduring boiler material known. The shell seam is stitch-riveted and copper-brazed, inside and out. The ends are swaged into place and thoroughly brazed, making seams or joints that are even stronger than the metal itself, and absolutely rust and corrosion-proof as well as leak-proof. Each boiler is factory-tested at 250 pounds pressure but such construction would withstand several times that amount of pressure. HUMPHREY Boilers are super-safe.

Boiler Insulation

The 2-inch granulated cork insulation used in HUMPHREY Boilers is the best obtainable to avoid loss of heat. It lasts forever without change in efficiency. In addition to the insulating properties of the millions of air cells in the cork itself, our method of tamping it solidly into place prevents direct conduction and air circulation, which are the two great causes of heat losses.

So effective is this insulation that it will prevent any noticeable loss of heat from a boiler full of hot water during periods ranging from eight to fifteen hours.

This insulation, like the high-grade Boiler that is used, costs more than less effective boiler covering, but is far cheaper in the end, because of better service and reduced fuel costs.

Outer Jacket, or Casing of Boiler

To hold the granulated cork insulation firmly in place, to protect it from moisture, and to save both insulation and boiler from any possibility of damage in transit or rough usage, an outer casing of heavy, rust-proof and corrosion-proof sheet metal is used. This is attached to heavy, cast-iron positioning rings at both upper and lower ends of Boiler.

This combination of superior Boiler, superior insulation and sturdy outer protective covering, is a quality combination of the highest standard.

The Humphrey Heater

More than thirty-nine years' experience has resulted in the perfection of this Heater, which, in result-producing qualities and durability, leaves nothing to be desired.

A heavy cast-iron shell of attractive design and shape encloses sensitive copper coils, made of high-grade copper tube, through which heat is transmitted "like magic" into the water from the powerful but simple and long enduring Burners underneath.

The front half of the Heater is hinged like a door, to provide easy access to both copper heating coils, and to the Burner, for inspection or cleaning. This door is equipped with self-closing springs to eliminate any possibility of failure to close it completely and by such oversight to waste heat.

Green Japan Finish: The Boiler Casing is finished with two coats of a dark, dignified, but rich Green Japan, and with ornamental brass bands.

The Heater itself is finished in the same color but in genuine porcelain enamel.

Gas Pressure Regulation: Part of the standard equipment is the high-grade HUMPHREY positive gas regulator, which equalizes pressure of gas and helps effect an economy in fuel.

The Burner: HUMPHREY Bunsen Burners are famous for their durability and are splendidly efficient in developing all possible heat from the gas burned. These Burners consist of two cast-iron pieces with brass flame-check, held together by brass screws and nuts which permit taking apart easily, even after years of use.

Adaptation of Sizes

No. 24 — Boiler capacity 24 gallons. Maximum capacity hourly, 55 gallons. Intended for small homes having bathroom, kitchen and laundry outlets.

No. 40 — Boiler capacity 40 gallons. Maximum capacity hourly, 85 gallons. Intended for homes having one or two private baths, a servants' bath, kitchen and laundry.

No. 66 — Boiler capacity 66 gallons. Maximum capacity hourly 116 gallons. Intended for homes with two or three bathrooms, one or two extra lavatories, kitchen and laundry.

Important

HUMPHREY Automatic Storage Systems are equipped with the HUMPHREY dual-duty, ball-check sediment flusher, which keeps the coils clean and in the most efficient and economical operating condition. Also furnished, if desired, with the HUMPHREY thermostatic pilot gas control.

Thermostatic Safety Gas Shut-off

Pilot Light: Simple, durable, efficient — burns less than a cubic foot of gas per hour — a cost not worth considering compared with the service it renders.

Temperature and Gas Control: This feature is the crowning achievement of HUMPHREY Automatic Storage Systems. The control mechanism is all metal. It is thermostatic in its action, but has been termed a "moment valve" because it turns fully *on* or shuts entirely *off*, in a moment. When it allows the Burner to relight, it turns it *full on* in the same way. The main burner is always, therefore, full *on* or full *off*, thus avoiding the chimney heat losses that occur with ordinary graduating thermostats. This is the best control known.

Humphrey — Cheapest to Operate

HUMPHREY Automatic Storage Systems operate at moderate cost for gas. They store up hot water in the Tank which is connected directly with the Heater. Circulation is set up between the Heater and the Boiler, or Tank, when the Heater is started. But the heat does not come in contact with the Boiler. The action is by circulation of water only, through the Heater into the Boiler, instead of directly on the Boiler. For this reason, no matter what the accumulation of sediment may be in the bottom of the Boiler, or Tank, the efficiency of the Heater and operating costs, are unchanged. Regardless of the length of service, sediment in the Boiler will not impair the effectiveness of the HUMPHREY Storage System. Keeping the Heater and the Boiler, or Tank, as separate units, accomplishes this result.

When the gas is not burning, circulation between the Heater and Boiler is automatically stopped, thus avoiding the operation expense which is incurred in some types of storage systems where circulation continues even after the gas is shut off.

Heat loss by radiation from the Boiler is kept to the lowest point because of the scientifically insulated walls of the HUMPHREY Boiler. The 2-inch thickness of ground cork between the two heavy boiler-walls, insures maximum conservation of heat — the most efficient storage it is possible to build.

Waste of heat is also avoided because this system *stores* hot water in the Boiler and does not heat it again until hot water is drawn off through faucets in sufficient quantity to reduce the temperature of the water in the Boiler by at least 20 degrees. Only then does the gas relight and start circulation again between Heater and Boiler, and require heat from the Heater. The burning of gas is timed economically, according to the need, by the wonderful Moment Valve and is shut off when the *set* temperature is reached.

Installation of Humphrey Automatic Storage Systems

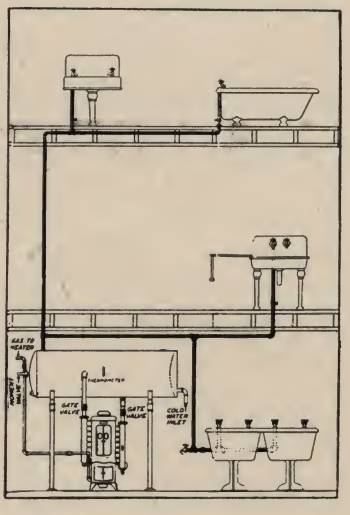
Installation is simple, merely requiring the connecting of Boiler to existing water pipes and the Heater to the gas pipe.

Hot water piping should be arranged to insure shortest possible distance from Boiler to faucets. Piping should be as small in diameter as conditions will permit.

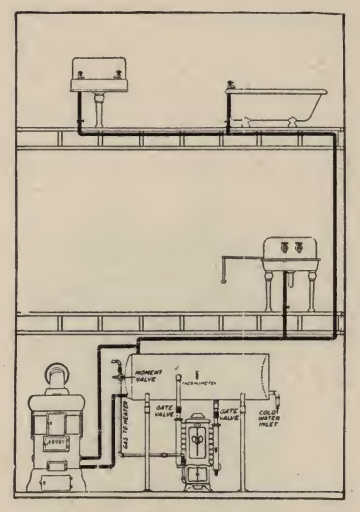
Direct System and Return System Installations are shown in diagrams in margin on this page.

Compare Humphrey Automatic Storage Systems with Other Types

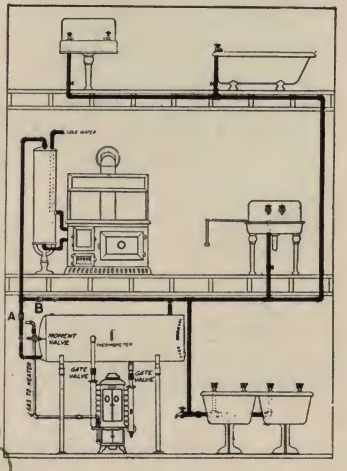
There are a number of hot water storage systems on the market. Some are hand-operated; some are automatic; some are merely a solid-type boiler with a burner underneath. To compare these systems with HUMPHREY Automatic Systems will give you a keener appreciation of the practical advantages embodied in the HUMPHREY.



HUMPHREY Storage System installed on Direct System of Plumbing

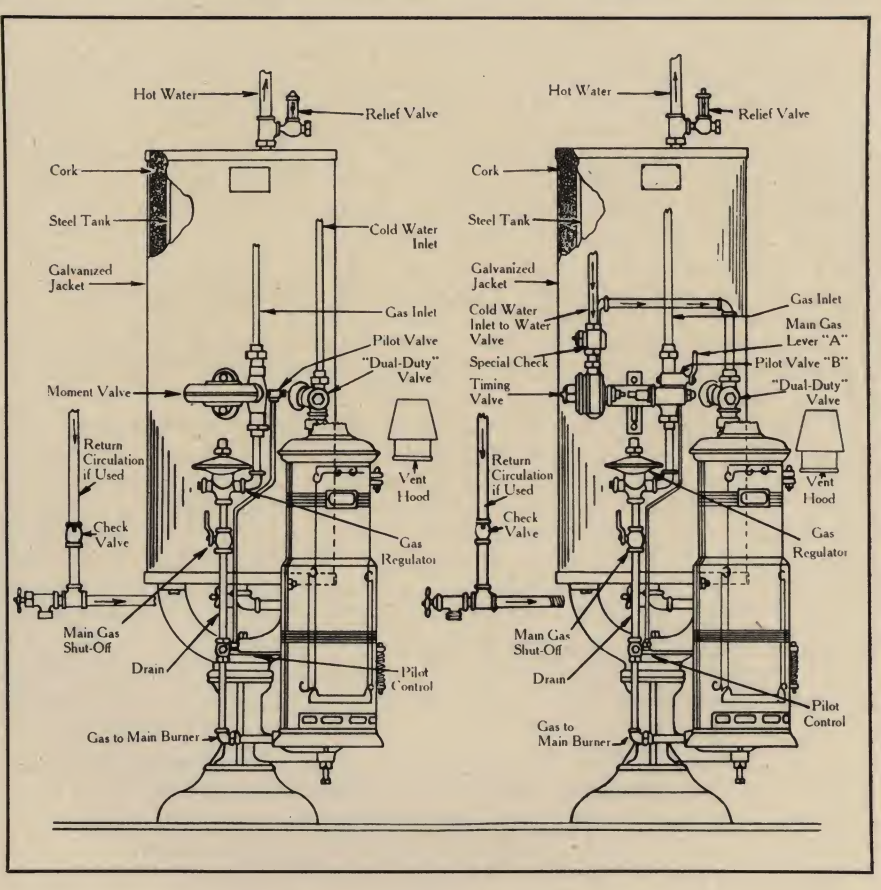


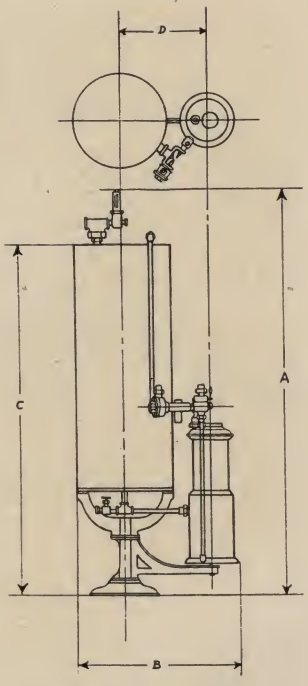
HUMPHREY Storage System installed with Auxiliary Heating Coil in Heating System



HUMPHREY Storage System installed on Re-heating System in connection with Range Boiler

Humphrey Automatic Storage Systems





Roughing-in Dimensions

Size.....	No. 24	No. 40	No. 66
A.....	67¾″	75½″	79¼″
B.....	27½″	28½″	33½″
C.....	61″	68¾″	72½″
D.....	16″	16″	20¼″

Sizes, Dimensions and Capacities

Size of System.....	No. 24	No. 40	No. 66
Capacity of Boiler.....	24 gal.	40 gal.	66 gal.
Size of Heater.....	No. 5-B	No. 5-B	No. 35
Water Connection.....	¾″	¾″	¾″
Gas Connection.....	½″	½″	½″
Flue Connection.....	4″	4″	4″
Size of Meter.....	10 lt.	10 lt.	10 lt.

Data on Boilers Furnished

Boilers are regularly supplied of galvanized iron. No orders are filled for systems with steam coils, handholes, manholes, etc.

Specification Notes

No. 24 and No. 40 are furnished regularly with vertical boilers. No. 66 is furnished with vertical or horizontal boilers. Horizontal are equipped with supports. Built with timing moment valve or moment valve as specified.

Model Specification

Furnish and install where shown on plans, No. ..... Humphrey Storage System with ..... (insert vertical or horizontal) Boiler of ..... (insert galvanized iron or copper), with (or without) Timing Moment Valve to be fitted in exact accordance with the directions furnished by the Humphrey Company. Run gas line of ¾-inch black pipe direct to inlet of Thermostatic Moment Valve, placing in line a gas cock and union of same size, with union between gas cock and Moment Valve. From convenient point on cold water main run line of ..... inch (galvanized or brass) pipe direct to inlet of Boiler. From outlet of Boiler run hot water line of ..... inch galvanized iron (brass or copper) pipe to hot water main of building. Connect vent of Heater with flue having good draft, placing Draft Hood in vertical run, as high as possible.

Acme Automatic Storage System

THE Acme is a moderate-priced HUMPHREY built Automatic Hot Water Storage System, not up to the quality standard of those models described on previous pages but still a very efficient and serviceable system. It operates economically and furnishes an abundant and uninterrupted supply of hot water for the needs of a small family. Maximum capacity is 55 gallons per hour. It is made in one size only, 24-gallon boiler capacity.

The Boiler is constructed of extra heavy copper-bearing metal, riveted, welded and galvanized.

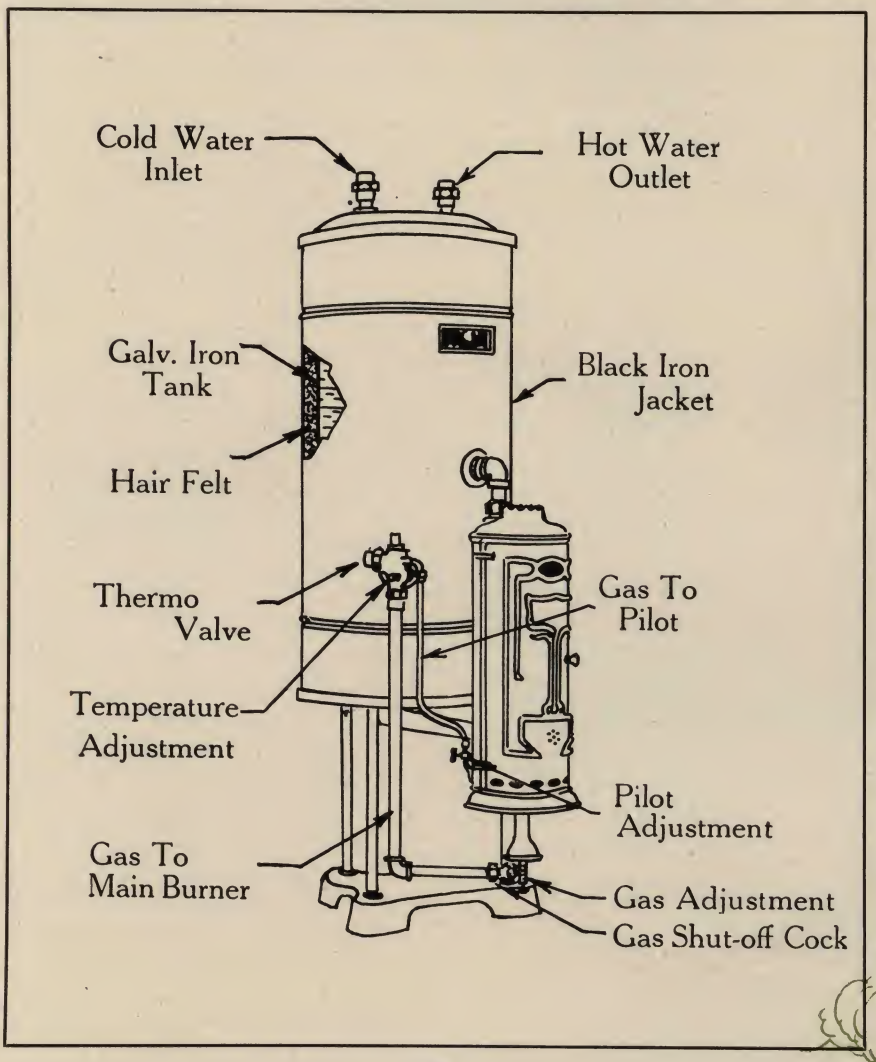
The separate *Heater* has a porcelain enameled jacket, rust-proof, always bright and attractive. Double coil of 18-gauge seamless copper tubing circulates the water over a powerful Bunsen-type Burner, producing 100% efficiency from gas burned.

All metal Thermostatic Valve acts positively, full *on* or full *off* in control of gas.

Pilot light burns at exceptionally low cost and is adjustable. Unaffected by down drafts.

Insulation of Storage Tank is composed of compact layers of hair felt encased in metal protective covering of rust and corrosion-resisting Armco Iron.

Acme Automatic Storage Systems are finished in attractive Olive Green, with trimmings heavily nickeled.



Important

HUMPHREY Automatic Storage Systems are equipped with the HUMPHREY dual-duty, ball-check sediment flusher, which keeps the coils clean and in the most efficient and economical operating condition. Also furnished, if desired, with the HUMPHREY thermostatic pilot gas control.

THE ACME
Automatic Storage System
Boiler Capacity, 24 gallons.

An Abbreviated Dictionary of Useful Information

1 U. S. Gallon	=231 cubic inches=.1337 cubic foot
1 U. S. Gallon	=8.33 lbs.=.83 Imperial Gallons
1 Imperial Gallon	=277.274 cubic inches=.16 cubic foot
1 Imperial Gallon	=10.00 lbs.=1.2 U. S. Gal.
1 Cubic Foot of Water	=7.48 U. S. Gal.=6.23 Imperial Gal.
1 Cubic Foot of Water	=28.375 litres=.0283 cubic meter
1 Cubic Foot of Water	=62.35 lbs.=.031 ton
1 Pound of Water	=27.72 cubic inches=.083 U. S. Gal.
1 Pound of Water	=.10 Imperial Gal.=.4537 Kilo
1 Atmosphere	=6.6697 kilos per sq.in.=14.7 lbs. per sq.in.
A Column of Water 1 ft. high	=.434 lb. pressure per sq. in.
A pressure of 1 lb. per sq. in.	=2.31 feet of water in height.

Water

A cubic foot of fresh water weighs nearly 62½ pounds, and contains 7½ gallons of water.

A gallon of fresh water weighs 8⅓ pounds. A gallon contains 231 cubic inches. A column of water, for each foot of height, exerts a pressure of .434 pounds per square inch.

The friction of water in pipes increases directly as the square of the velocity and length of pipe, and inversely as the diameter.

Doubling the diameter of a pipe increases its capacity four times.

Water Temperature Required for Various Classes of Service

	Minimum °F	Maximum °F.
Garages (for washing cars)	80	100
General domestic use	130	160
Laundry (hand work)	115	212
Laundry (machine work)	180	212
Barber Shop (not sterilizing)	115	150
Bars and soda fountains (hot drinks)	175	212
Lavatory and cleaning uses	115	150
Baths only	110	150
Shower baths	110	150
Swimming pools	80	212
Baptistries	80	212
Dishwashing (hand work)	130	212
Dishwashing (machine)	180	212
Milk dealers (not sterilizing or pasteurizing)	115	150

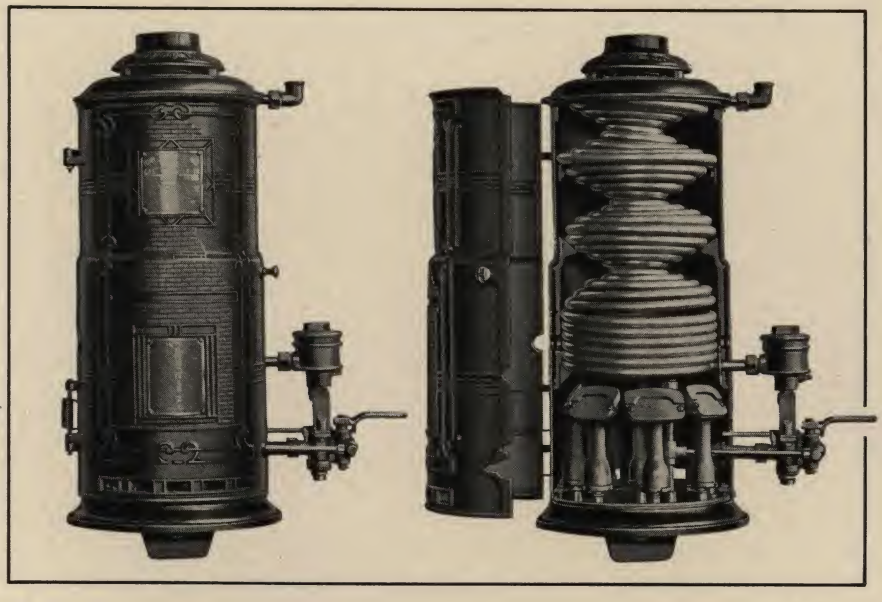
1 cubic inch	= 0.0361 lbs.
27.71 cubic inches	= 1.00 lbs.
2.035 in. of mercury	= 1.00 lbs. pressure
27.71 in. of water	= 1.00 lbs. pressure per square inch
1 inch of water	= 0.036125 lbs. pressure per sq. inch
1.731 inches water	= 1 ounce
1 foot water	= .433 lbs.
1 cubic foot	= 7.48 gallons
	= 1728 cubic inches
	= 62.4245 lbs. at 39° F.
	= 8.3311 lbs. distilled
	= 8.34 lbs. ordinary

1 U. S. gallon	= 231 cubic inches
1 Imperial gallon	= 0.1337 cubic feet
	= 10.00 lbs. at 62°
	= 277.274 cubic inches
1 Litre	= 61.02 cubic inches
1 cubic meter	= 35.31 cubic feet
1 cubic foot	= 28.317 litres
1 cubic foot pure water weighs at	
32° F	= 62.418 lbs.
39.1° F	= 62.425 lbs.
62° F	= 62.355 lbs.
212° F	= 59.76 lbs.

Flow in Gallons per Minute by Ordinary Fixtures

Fixture	Fair Flow	Good Flow	Excellent Flow
Kitchen Sink Bibbs	2	4	6
Pantry Sink — High Goose Neck Bibbs	2	2	3
Pantry Sink — Large Plain Bibbs	4	6	8
Vegetable Sink Bibbs	2	4	6
Laundry Tray Bibbs	4	6	8
Slop Sink Bibbs	3	4	6
Lavatory Basin Bibbs	2	3	4
Bath Tub Bibbs	3	4	6
Shampoo Spray	½	1	2
Liver Spray	1	2	3
Shower Baths			
5" Rain Heads	2	3	4
6½" Rain Heads	2	3	5
8" Rain Heads	4	6	8
8" Tabular Heads	6	8	10
Needle Baths	20	30	40
Manicure Tables	1	1½	2

This table was compiled from actual tests on a water pressure of 30 lbs. per square inch. It is intended to set forth what is, in our opinion, only a proper flow from the fixtures. It does not give the largest flow possible in any case. That is governed by the water pressure. Differences will be found among similar fixtures made by different manufacturers. In explanation of the three rates of flow listed, it should be noted that by "Fair Flow" is meant a stream just large enough to render what might be called good service, by "Good Flow" is meant a stream, which, in most households, would be entirely satisfactory, and by "Excellent Flow" is meant a flow which, if increased to any great extent, would cause annoyance by splashing and noise.



Humphrey Cottage Automatic Gas Water Heaters

THIS type of HUMPHREY Heater performs the same automatic service as the larger Instantaneous Heaters except that the capacity is limited to few faucets. HUMPHREY Cottage models are designed for small homes or cottages, individual apartment service, barber shops, soda fountains, doctors' and dentists' offices, etc., where an instant, unlimited supply of hot water is needed through one or more fixtures of small capacity.

No. 50 HUMPHREY Cottage Automatic Gas Water Heater has a black japan, cast-iron jacket.

All standard HUMPHREY features are embodied in these Heaters.

Installation Data

Use same specification model as for HUMPHREY Automatic Heater, Type A, inserting dimensions to correspond with the Cottage Automatic as given in tables on this page. Complete instructions for installations are furnished on Direction Card with each HUMPHREY Heater.

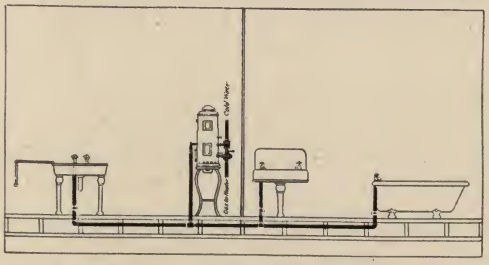
Sizes and Application

Heater	Per Minute Capacity	Average Temp. Rise Nat. Gas	Average Temp. Rise Art. Gas	Length of Coil	Outside Diameter of Coil	Diameter Water Valve	Size Water Inlet	Size Water Outlet	Water Pressure Minimum
No. 50	2 gallons	80°	63°	60′	⅝″	2″	¾″	¾″	20 lb.

Uses—Cottages, bungalows and apartments, doctors' and dentists' offices, barber shops, stores, etc.

Dimensions and Capacities

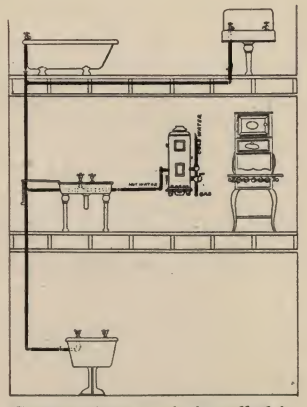
Size	Size Gas Meter	Gas Consumed per Minute	No. Burners	Orifice Nat. Gas	Orifice Art. Gas	Orifice Gasoline Gas	Size Gas Line	Size Flue Conn.	Weight Crated Lbs.	Weight Net Lbs.	Adjust Flow of Water
No. 50	10-L	2 Cu. Ft.	8	52	40	36	¾″	4″	100	75	2 gal. per min.



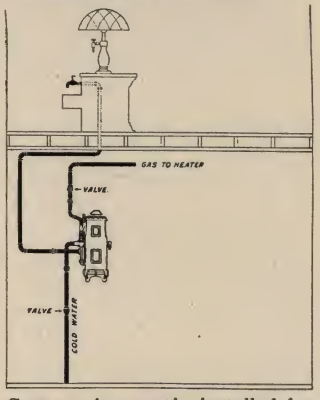
Cottage Automatic installed in kitchen of apartment supplying adjoining bathroom.

Gallons per Minute at Various Temperatures

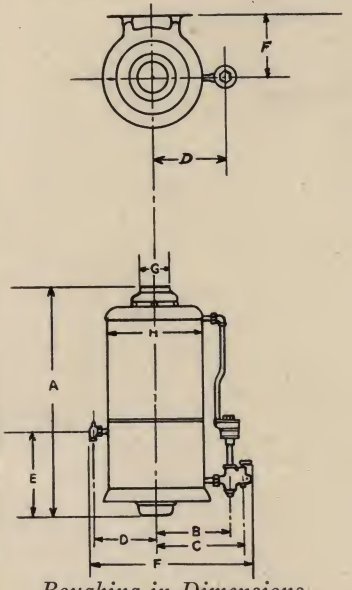
Size of Heater.....No. 50	
50°	2.57 gallons
60°	2.09 gallons
70°	1.80 gallons
80°	1.57 gallons
90°	1.40 gallons
100°	1.26 gallons
110°	1.15 gallons
120°	1.04 gallons
130°	.97 gallons
140°	.90 gallons
150°	.84 gallons



Cottage Automatic installed in kitchen close to sink and supplying hot water to bathroom when run is not over 12 feet.

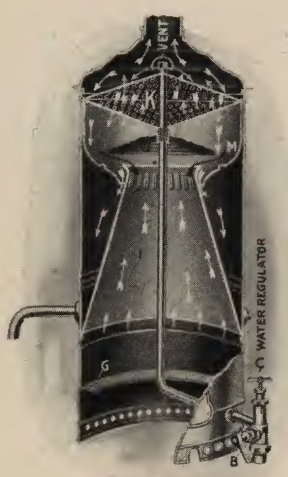


Cottage Automatic installed for soda fountain. The most practical method for economy and service.



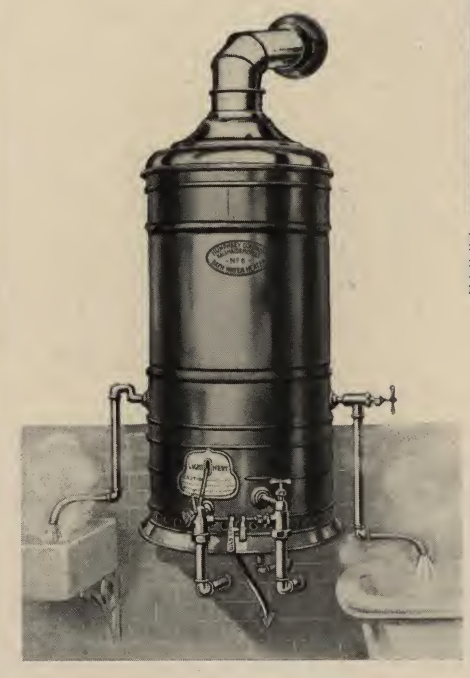
Roughing-in Dimensions

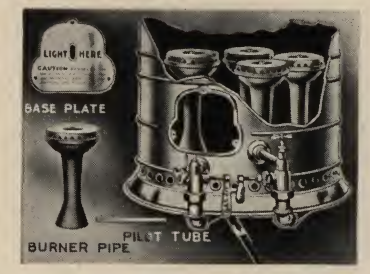
Size.....No. 50	
A	33″
B	9″
C	11″
D	8½″
E	11″
F	23″
G	4″
H	10″



Sectional View

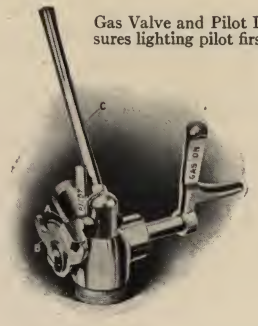
Showing water feed pipe going up through center of flame area to small revolving sprayer. Water thrown over a finely perforated cone, drops in small particles coming in direct contact with the heat-flames, then down the hot inner copper wall.





Removable Burners and Base Plate—for cleaning.

Interior assembly of burners, instantly accessible by unscrewing one nut.



Gas Valve and Pilot Lock insures lighting pilot first.

Humphrey Instantaneous Bath Water Heaters

AS illustrated above, this type of heater can *only* be used in close and direct connection to the fixture to be supplied. Being of the non-pressure construction they can only be used in the same room as fixtures, either in bathroom, kitchen, barber shop, etc. Must be connected to a vent pipe.

The operation is simple and instantaneous. Merely light the pilot, turn on the interlocking gas and water valve lever, and HOT WATER flows instantly at the rate of 2 or 3 gallons per minute. The same simple operation of turning off the interlocking lever shuts off the gas to burners and the water *simultaneously*. Then turn off the pilot, and all expense stops. Fire cannot burn in heater without water, positively safe — a child can operate it.

Made in two models, Nos. 6 and 8, differing only in capacity. Both are direct contact type. The inflow of water is divided into small particles and forced into direct contact with the intensive heat. Practically every unit of gas is utilized. Heated water cannot be used for drinking.

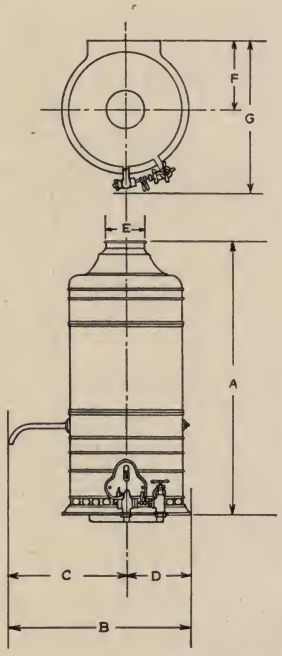
Model No. 2 is the non-contact Instantaneous Heater which differs from the Nos. 6 and 8 in that the products of non-combustion do not come into contact with the water. The inner water surfaces are heavily tinned, rendering the water suitable for hot drinks, cooking, domestic and commercial purposes.

Construction is rigid and lasting. Built entirely of sheet copper, all thoroughly nickel plated and highly polished. Valves are brass, burners cast-iron, and the shelf of steel, white porcelain enameled and rust proof.

To install, fasten shelf with attached burner ring on wall. Set burner pipes over the nozzles. Place the heater on the shelf, and make the water and gas connections. These must be properly vented.

Note in the view above the few number of parts — no pipes to freeze, break or become lime-clogged — nothing to quickly wear out.

Nickeled brass pipes and fittings on opposite page can be furnished when specified. Complete equipment always improves the attractiveness of the installation.



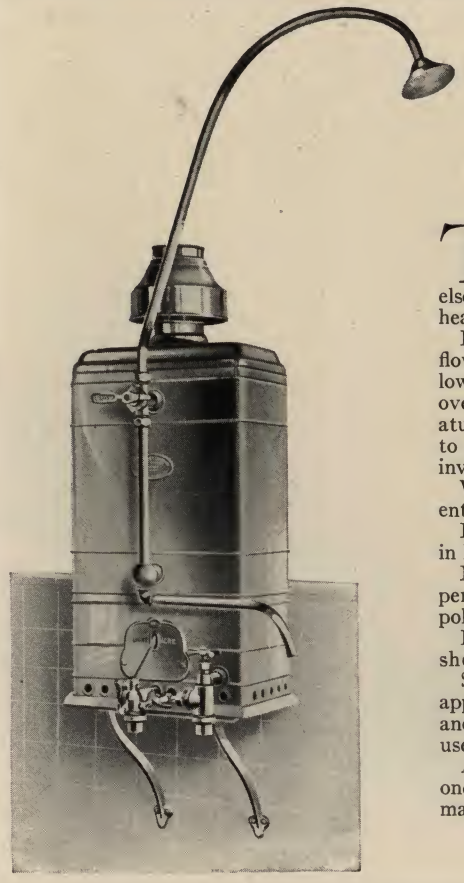
Roughing-in Dimensions

Size	No. 8	No. 6
A	28⅞″	29¾″
B	20″	21″
C	13¾″	14½″
D	6¼″	6½″
E	3½″	3½″
F	6½″	7½″
G	16″	17¾″

Sizes, Dimensions, Capacities

No. Heater	Gas Supply from Meter	Heats Gallons per minute 50° in Temp.	Height	Diameter	Shipping Weight
Non-contact 2	¾-in.	3	36 in.	12 in.	85 lbs.
Contact 6	¾-in.	3	30 in.	12 in.	65 lbs.
Contact 8	½-in.	2½	30 in.	10¼ in.	53 lbs.

The equipment includes Safety Valves and Unions, one bent Outlet Spout.



Humphrey Shower Bath Water Heater

THE HUMPHREY Shower Bath Heater is a pressure heater, suitable for the bathroom or elsewhere. It supplies instantly heated water on lighting the gas.

By turning a two-way cock the flow of water will be stopped at the lower outlet and sent out of the overhead shower. The temperature can be instantly regulated to suit. By turning off the gas, an invigorating cold shower can be had.

Water and heat controls are entirely separate.

Interlocking valves prevent fire in heater unless water is there.

Made entirely of brass and copper, nickel plated and highly polished.

Has white porcelain enameled shelf, nickel-plated brackets.

Simple, durable, handsome in appearance, economical to operate and a great convenience wherever used.

A bath heater and shower all in one — costs less to install than many single showers.

Humphrey Shower Bath Water Heater

Height Heater only	Height including Shower	Width	Thickness	Gas Supply Pipe	Size Gas Meter	Size Water Supply	Heats per Minute 50° raise	Size Vent Pipe	Net Weight	Approximate Weight Boxed
27″	46½″	14¾″	13½″	¾″	10 lt.	½″	2 gals.	3½″	37 lbs.	60 lbs.

Extension Thimbles

Have nickel-plated flanges on each end; 4 to 8-inch extension; 3½ inch.

Vent Pipe Collars

3½-inch, nickel plated.

Ventilating Hood

For use where vent pipe terminates outside, to prevent down drafts. Galvanized iron.

Vent Pipe

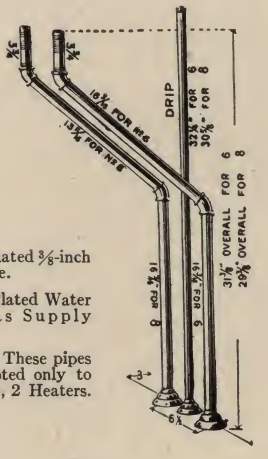
Furnished in 30-inch lengths, unless otherwise ordered. 3½-inch, nickel plated.

Elbows, 3½-inch, nickel plated, adjustable to any angle.

Other Nickel Plated Fittings Available.

Check Draft Hood

This Draft Hood positively prevents down drafts.



Nickel Plated ⅜-inch Drip Pipe.

Nickel Plated Water and Gas Supply Pipes.

Note: — These pipes are adapted only to Nos. 8, 6, 2 Heaters.

24 HUMPHREY Features

Quicker heating.

Better circulation.

Tapered inner coil.

High power burner.

Tapered heat baffle.

Fewest possible parts.

Quickly removable coils.

Superior design and finish.

Offset hinges; gravity latch.

Perfect secondary air supply.

No cotter pins; no set screws.

Coils wound with reverse grade.

Fifty to sixty-five feet per hour.

Elevated separable flame points.

Full-length heavy copper tubing.

Two unions saved in the water line.

Unions for inlet and outlet connections.

Every hole placed correctly and evenly drilled.

Burner easily removed for cleaning or inspection.

Coils brazed in brass manifolds. No joints to leak.

Burner engaged on machined end of tubing, always level.

Supplied with needle adjustment or straight-on gas cock with set screw shutter.

HUMPHREY standard workmanship and material.

Saving at both ends, installation and maintenance.

Uninterrupted Service:

The copper coils of Humphrey Tank Water Heaters have joint unions — not brazed joints. This quality construction is a proven economy as it positively prevents development of cracks and leaks. The coils are tested under heavy pressure, to insure never-failing service.

Increased Efficiency:

The heavy malleable casting unions for inlet and outlet connections constitute a built-in feature originated by Humphrey. Neater, better, more rigid installations are thus made at less installation costs.

Quick Results:

The genuine copper coils of these Humphreys are skillfully designed to obtain the greatest heat diffusion from the simple but powerful gas burners. Only super-select, seamless copper tubing is used — the very finest obtainable.

In every detail these Humphreys are outstandingly superior in this class of gas water heaters.

No. 35

Finished in green. Cast iron jacket. 35-foot copper coil, for larger 60 and 80 gallon tanks.

5-R Closed View

Pressed steel jacket in blue or gray porcelain enameled finish. Patented, moulded transite composition inner insulation wall.

HUMPHREY full-length, standard double copper coil, in reverse grade over the two-piece spout flame Bunsen Burner.

5-R Open View

Humphrey Genuine Copper Coil Tank Water Heaters

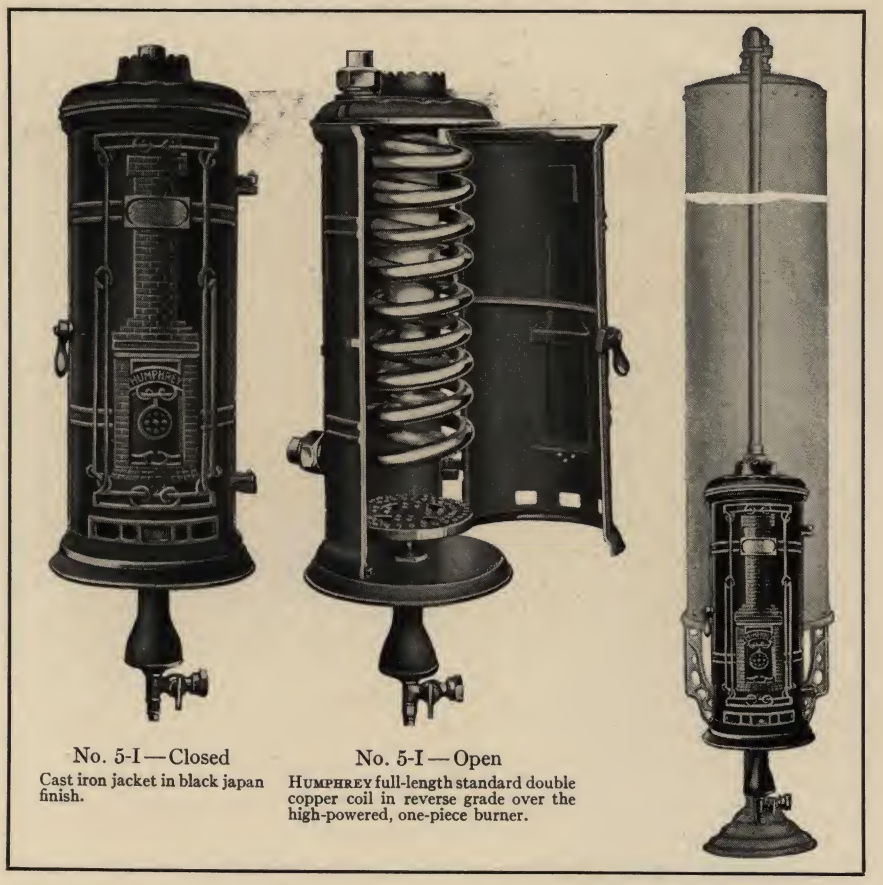
THOROUGHNESS in the construction of a Tank Water Heater is worth a dollar or two more to the trade in permanently satisfied customers, and means infinitely *more* to the consumer who pays for and receives BETTER SERVICE VALUE.

This has always been the firmly established policy in the manufacture of HUMPHREY *Genuine* Copper Coil Tank Water Heaters. That it pays both ways — for the Dealer who recommends the sale and for the Consumer who expects full value — is proved impressively by the increasing volume of HUMPHREY Genuine Copper Coil Tank Water Heaters sold today.

Too many tank heaters are offered on a purely "price basis," with the natural result of sacrifice in enduring quality. This business principle is fundamentally unsound, because a person once disappointed spreads this to a whole community and it remains a reflection on the dealer who recommended the purchase. Without the confidence of the public, sales costs are certain to be high.

Even though a tank heater represents a low unit of sale and is merely connected to a range boiler, it is not right to infer that either the public or the dealer can afford to accept a cheap costly-to-maintain outfit in preference to quality that endures year after year.

On a fair basis of comparison, HUMPHREY Tank Water Heaters represent an accepted standard. Each is built with the same care and on the same efficiency principle as the larger HUMPHREY Instantaneous Automatics. They are built to serve, with a recognition of the need in their market for a long-enduring, full-measure *service*.



No. 5-I — Closed
Cast iron jacket in black japan finish.

No. 5-I — Open
HUMPHREY full-length standard double copper coil in reverse grade over the high-powered, one-piece burner.

Description of Heaters

No. 5-R HUMPHREY genuine copper coil Tank Water Heater is made of pressed steel. Its all blue-enameled jacket is clean, sanitary and rust-proof. A patented, heat-resisting and moisture-proof lining prevents radiation of heat units into the room, greatly increasing the efficiency and capacity of this equipment.

The genuine copper coils are accurately machine wound over a powerful 50 to 60-foot capacity Burner so as to insure absorption of maximum heat. Every coil is tested to 800 pounds pressure. Connections to coils are *brazed*.

The 5-R HUMPHREY has a two-piece spout flame Bunsen Burner, with a flat screen flame check, which develops a very intense heat.

Inlet and outlet unions are built in — a part of every heater.

In finish, attractiveness and efficiency, this is conceded to be the most modern, high-test tank heater on the market.

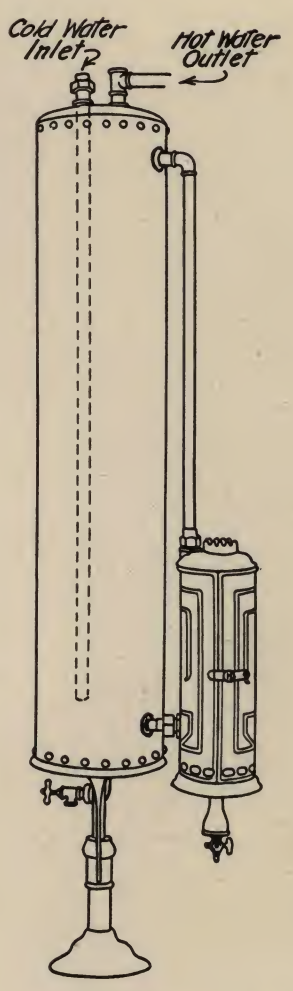
No. 35 HUMPHREY Tank Heater is made in a larger size and capacity for 60 and 80-gallon tanks. Built with 35-foot genuine copper coil, cast-iron jacket, in the design shown above, with two-piece spout flame burner having flat screen flame check, and a semi-wall inner insulation.

No. 5-I HUMPHREY Tank Heater is similar to the No. 5-R, except that the jacket is cast-iron, finished in black japan, without insulation wall, with one-piece burner, and gravity latch.

These HUMPHREY Tank Heaters, although sold at such popular low prices, embody all the HUMPHREY Quality Features shown in the margin on page 30 and are certain to build prestige for the Dealers who sell them.

Sizes, Dimensions and Capacities

Size of Heater	Height	Width	Diam. of Coil	Adapted for Tanks of	Net Weight	Shipping Weight
No. 5-I	22⅞ in.	7 in.	¾ in.	30 and 40 gals. cap.	35 lbs.	45 lbs.
No. 5-R	22½ in.	7¾ in.	¾ in.	30 and 40 gals. cap.	35 lbs.	45 lbs.
No. 35	30 in.	10 in.	¾ in.	60 and 80 gals. cap.	73 lbs.	96 lbs.



Standard Method of Installation

Notice the simple method of attaching this type of Humphrey Tank Heater to kitchen boiler. No unions are needed in the piping. Inlet and outlet unions are furnished with every Humphrey Tank Water Heater. This saves time and the labor that would be required for accurately cutting and threading the usual number of pieces of pipe. It also eliminates the cost of the two unions which are thus saved on every installation.

How to Calculate Sizes Needed

FIRST, ascertain the number of people in the family, or in the building; then the frequency of daily hot water use and to what extent, based on baths per person, housework requirements, dish water, washing machine, garage, and other heavy or simultaneous demands. This will help determine the peak load requirements and distribution demanded during the day.

It is then a simple matter to determine the needed gallons per minute to satisfy peak load requirements as well as to satisfy usual demands. You can calculate from this the approximate gas consumption and give your prospect an advance idea of the cost of operation, for the type of HUMPHREY System best adapted to the requirements.

Sketch the layout of the building, whether it be a bungalow, duplex, large residence, office building or factory, so as to determine the most efficient location of the heating system. If blue prints of the building are available, so much the better. Ascertain the working water pressure at the highest hot water outlet* and then the number of bibbs to be supplied. The exact size to be recommended can then be definitely determined. Consult sizes and capacities in the tables shown in this book.

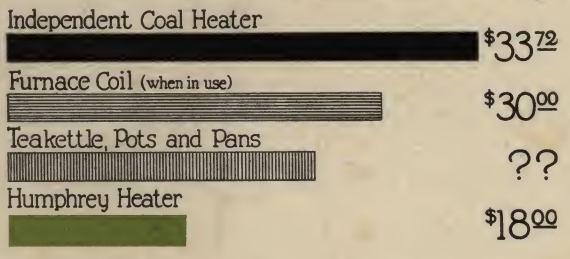
For apartments, assume a need of three gallons per minute per bathroom and specify a HUMPHREY System having two-thirds the capacity determined, as no more than two-thirds of the faucets will be drawing water at the same time.

* Multiply the constant .43 by the height in feet of the highest hot water outlet above the ground. Subtract the result from the water pressure of the street main or, in a house tank system, from the pressure at the basement. This insures selection of a heater suitable to the working pressure.

Summarizing the above: Always figure the number of people to be served; size of home or building; layout or arrangement of the fixtures; the working water pressure* in pounds per square inch at the highest hot water outlet; and number of bibbs to be supplied. With this information you can accurately determine the exact size to meet the requirements.

Graphic Chart of Comparative Costs

Average costs of heating water for six months by the commonly used methods for a family of from three to four people under the given conditions described below for each method.



The Graphic Chart shown here as a comparison of costs of heating water by various methods was compiled after the most careful and accurate investigations extending over a period of several months. In addition to these convincing figures, consider the inconvenience of every other method of heating water as compared with HUMPHREY Water Heating Systems. This superior convenience is worth more actual money to the user than any other household convenience, and the additional benefits of improved health derived from adequate hot water service are beyond estimate in dollars and cents. Strictly on the basis of money value, the HUMPHREY Systems have no real competition from any other method.

Reputation of the Maker

HUMPHREY has earned its place as the one Standard Hot Water Service through the 39 years of constant striving to render the best service with the most simple, trouble-proof equipment that experience and inventive genius can produce. Square dealing in every detail of its business relations with others has helped also to establish HUMPHREY as the safe, reliable service.

Merchandising Service

Valuable Dealer Helps—Newspaper Ads, Folders, Booklets, Displays, Slides, Sales Plans, etc.—are available for dealers who desire them to aid in the promotion of their business. Write for samples and suggestions.

Engineering Service

During our long experience we have encountered practically every conceivable problem in gas water heater service. This experience is always at your command. Do not hesitate to consult us on problems that seem to be out of the ordinary.

HUMPHREY COMPANY, KALAMAZOO, MICHIGAN
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